

1 UNITED STATES DISTRICT COURT

2 CENTRAL DISTRICT OF CALIFORNIA - WESTERN DIVISION

3 HONORABLE STANLEY BLUMENFELD, JR., U.S. DISTRICT JUDGE

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5 SANTA CLARITA VALLEY WATER AGENCY, )  
6 PLAINTIFF, ) CASE NO.  
7 vs. ) CV 18-06825-SB  
8 WHITTAKER CORPORATION, et al., ) VOLUME 14  
9 DEFENDANTS. ) PAGES 1514 TO 1673

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13 REPORTER'S TRANSCRIPT OF  
14 TRIAL DAY 8  
15 TUESDAY, NOVEMBER 30, 2021  
16 8:26 A.M.  
17 LOS ANGELES, CALIFORNIA

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1 TUESDAY, NOVEMBER 30, 2021; 8:26 A.M.

2 | LOS ANGELES, CALIFORNIA

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7 THE CLERK: Calling Item No. 3, Case  
8 No. CV 18-06825-SB, Santa Clarita Valley Water Agency versus  
9 Whittaker Corporation, et al.

08:26AM 10 Counsel, please state your appearances, starting  
11 with plaintiff's counsel.

12 MR. RICHARD: Good morning. Patrick Richard for  
13 plaintiff. And with me is Ms. McGuane, Mr. Gee, our client  
14 representative, Mr. Stone, and Ms. Micevych.

08:26AM 15 THE COURT: Good morning.

16 MR. BLUM: Good morning, Your Honor. Fred Blum  
17 for defendant. With me is Mr. Trowbridge, Mr. Gallagher, and  
18 the client representative, Eric Lardiere.

19 THE COURT: Good morning. We are outside the  
08:26AM 20 presence of the jury. We will bring in the jury momentarily.

21 Just a couple of very quick points. I did  
22 receive the e-mail essentially objecting to Mr. Hokkanen's  
23 opinion regarding alternative or other sources. The most that  
24 the Court is going to be able to do at this point is to direct  
25 counsel for Whittaker not to elicit an opinion concerning other

1 sources without first providing the methodology and work done  
2 by Mr. Hokkanen.

08:27AM

3 I do have some questions as to whether or not  
4 there is going to be a sufficient foundation. So I will listen  
5 to determine whether there is.

08:28AM

6 That, I think, is the most that I really can do,  
7 Mr. Richard. Although, I will tell you that I do think you may  
8 be reading too much into the Court's ruling with regard to  
9 other sources. I have seen that appear from time to time in  
10 objections. And it doesn't mean that the Court rejects every  
11 time you make reference to it, but I think you're making  
12 excessive reference to it.

08:28AM

08:28AM

13 I especially was focused on -- I think it was  
14 Mr. Shoup, S-h-o-u-p, if I'm spelling it correctly, and his  
15 report and aspects of the report that the Court ruled upon.  
16 And then Mr. Hokkanen relied in part, it seemed, I think on  
17 Opinion 8, maybe it's Opinion 9, one of those two opinions,  
18 it's 8, on the Shoup report. And I simply indicated, as I  
19 recall, that whatever the Court's ruling was for Shoup would  
20 essentially apply to Hokkanen.

21 That doesn't relieve Whittaker from its  
22 obligation to establish a foundation for an opinion.

23 Do you wish to be heard at this time?

08:29AM

24 MR. RICHARD: Just that the issue isn't just --  
25 it's about going beyond the opinions in his report, Your Honor.

1 And so I think Your Honor set up the best we can do on that.  
2 And I'll, if needed, object if I feel he's going beyond the  
3 opinions in his report.

4 THE COURT: I am going to admonish -- maybe a  
08:29AM 5 little bit too strong a word -- but of that nature, Mr. Blum,  
6 that you do not go outside the scope of the report.

7 As counsel is probably aware, despite the fact  
8 that I have seen these reports from time to time, I don't have  
9 a photographic memory that I can simply capture everything that  
08:29AM 10 was stated in the report. But if I find out that counsel  
11 represents to me that they have stayed within the scope of the  
12 report and they have not, we will have an OSC. And I will  
13 consider not only sanctioning counsel but also striking  
14 testimony in a fairly strong worded way before the jury.

08:29AM 15 MR. BLUM: No problem.

16 THE COURT: And that applies to both sides. Both  
17 sides, I think, have been representing to the Court when  
18 something is in and outside the reports. I know Mr. Gee has  
19 been candid in doing that. And I expect candor from all sides.

08:30AM 20 With regard to the Durant deposition, you're  
21 going to have to fill your time until we get to that. So I  
22 have not yet had a chance to completely go through the  
23 materials. I won't go into detail. But I didn't get all the  
24 materials at the same time.

08:30AM 25 So I was looking at exhibits last night, only to

1 see early this morning that there's testimony as well that's  
2 being objected to, separate and apart from the exhibits.

3 So please make sure, Mr. Blum, that you have  
4 witnesses available to fill the time. I don't know that we  
08:30AM 5 will get to the video today, as I don't know that I'm going to  
6 be able to give you a ruling by the end of today.

7 MR. BLUM: Your Honor, we're fine. We have  
8 witnesses. We have three witnesses for today in addition to  
9 Mr. Leserman.

08:31AM 10 THE COURT: All right. Then let's go ahead and  
11 proceed. Let's have Mr. Leserman -- is he here in the  
12 courtroom? I don't see him.

13 MR. BLUM: Your Honor, may I ask one question  
14 before we start?

08:31AM 15 THE COURT: Yes. It appears we have a few  
16 minutes, as one juror is arriving shortly. Yes?

17 MR. BLUM: A couple things. Mr. Richard and I  
18 talked this morning about the jury instruction on successor. I  
19 think we have a conceptual agreement. We're going to try to  
08:31AM 20 wordsmith it at lunch today.

21 THE COURT: All right.

22 MR. BLUM: As to the JMOL, the plaintiffs cited  
23 in their opposition we got -- I think it was last night. And  
24 frankly -- to be frank, Mr. Trowbridge is the one who read it.  
08:31AM 25 I was preparing for today. And they cite to testimony of

1       Mr. Alvord to prove the issue of ownership, which was done  
2       after we filed our motion because -- now, I'm going to make an  
3       assumption, Your Honor, that you're going to allow it to be  
4       considered for the JMOL. We would object. But based on your  
08:32AM 5       prior rulings, I assume you're going to overrule my objection.

6                   THE COURT: I am going to overrule it. As I  
7       suggested with Mr. Leserman, unless I really see prejudice, I'm  
8       not going to be inclined to make a client essentially pay for a  
9       client's readily correctible omission. And this would fall  
08:32AM 10      within that category.

11                  So unless you can claim to the Court that you  
12       have prejudice, other than, of course, the prejudice of the  
13       fact that now there's that evidence, the Court is going to  
14       overrule the objection.

08:32AM 15            MR. BLUM: And, Your Honor, again, that's what I  
16       expected the Court to do. But what I would ask the Court is,  
17       if we can file no more than a three-page pleading tomorrow  
18       about why the claimed interest isn't sufficient in the case.

19                  THE COURT: I will allow it.

08:33AM 20            MR. BLUM: Thank you, Your Honor.

21                  THE COURT: All right. I guess we're going to  
22       take a minute or two break, and we will bring the jury in as  
23       soon as the last juror has arrived. Please do remain in the  
24       courtroom so we can get started as soon as all eight have  
08:33AM 25       assembled.

1                   We will be in brief recess.

2                   (A recess was taken at 8:33 a.m.)

3                   (The following proceedings were held in

4                   open court in the presence of the jury:)

08:40AM 5                   THE COURT: We are on the record in Santa Clarita  
6                   Valley Water Agency versus Whittaker Corporation. We are now  
7                   joined by the jury, in addition to having all counsel present.

8                   Good morning, ladies and gentlemen.

9                   THE JURY: Good morning.

08:40AM 10                  THE COURT: And we also have Mr. Leserman who is  
11                  on the stand.

12                  And, Mr. Leserman, you understand that you remain  
13                  under oath?

14                  THE WITNESS: I do.

08:40AM 15                  THE COURT: Members of the jury, you may recall  
16                  that Mr. Blum had completed his direct examination yesterday,  
17                  except he omitted a few questions that he wanted to ask. So I  
18                  have allowed him to continue with his direct examination, and  
19                  then we will shortly move to Mr. Gee with cross-examination.

08:40AM 20                  Mr. Blum.

21                  MR. BLUM: Thank you, Your Honor. If you could  
22                  pull up Exhibit 1419, which has been stipulated into admission.

23                  (Marked for identification and received  
24                  into evidence Exhibit No. 1419.)

25                  ///

1 | JAMES LESERMAN

2 CALLED BY THE DEFENDANT, WAS PREVIOUSLY SWORN.

3 DIRECT EXAMINATION (RESUMED)

4 BY MR. BLUM:

08:40AM 5 Q Mr. Leserman, do you see the exhibit on your  
6 screen?

7 A Yes, I do.

8 Q You're the author of this e-mail; correct?

9 A Yes.

08:41AM 10 Q Who is Matt Stone?

11           A        He is the general manager of the Santa Clarita  
12    Valley Water Agency.

13 Q He is the person sitting at plaintiff's counsel  
14 table closest to you?

08:41AM 15 A Yes.

16 Q And he's your boss; right?

17 A Yes.

18 THE COURT: And, Mr. Leserman, if you would like,  
19 you can remove your mask while you're testifying. Thank you.

08:41AM 20 Q BY MR. BLUM: Now, the e-mail says that you were  
21 sending him a summary of the major VOCs over the past five  
22 years. And these were VOCs that were found in the turnouts;  
23 correct?

24 A Yes, they are.

08:41AM 25 Q Why did you send those to him?

1 A I don't recall.

2 Q Do you recall whether he asked you to send the  
3 information to him?

4 A No.

08:41AM 5 Q Are you -- do you know whether or not Mr. Stone  
6 has a Master's degree in chemical engineering?

7 A I don't know.

8 Q Do you find that he's knowledgeable about the  
9 processes that the water agency uses to distribute its water?

08:42AM 10 A I believe so.

11 Q All right. Now, the chart that you sent, what is  
12 the chart?

13 A It shows the range, the minimum, the maximum, the  
14 average TCE and PCE concentrations in micrograms per liter for  
08:42AM 15 the Saugus well 1, Saugus 2 well, the effluent from the Saugus  
16 plant, and the five turnouts that are part of the monitoring  
17 program.

18 Q All right. The effluent, can you tell me what  
19 the average was for PCE? And that is right there.

08:43AM 20 A For the effluent, .6 micrograms per liter.

21 Q It's right near the detection limit; correct?

22 A Yes. The detection limit is 0.5.

23 Q Now, for turnout SC-1, what was the average  
24 concentration during those -- I guess it's a five-year period  
08:43AM 25 of PCE for SC-1?

1 A It says 6.

2 Q Okay. Thank you.

3 A I have some doubts that it's correct.

08:43AM 4 Q When you sent the -- when you send e-mails to  
5 your boss, do you usually make sure the information is correct?

6 A Like I say, I doubt the results. If I had to do  
7 it over again, I suspect there would be a lower number.

8 Q Well, when you sent this information to Mr. Stone  
9 in 2016, did you believe it to be correct?

08:43AM 10 A I don't know what I was thinking in 2016.

11 Q Well, Mr. Leserman, would you ever send  
12 information to your boss that you knew was not correct?

13 A Not knowingly, but I -- I make mistakes.

14 Q Well, let's take a look at another hit, and that  
08:44AM 15 would be for SC-2. What's the average for SC-2 for PCE?

16 A It says 1.2.

17 Q That's twice as much as you report to be the  
18 average in the effluent tank; correct?

19 A Yes.

08:44AM 20 Q Now, were you wrong on that one too?

21 A Looking at it now, I probably was.

22 Q But you sent it to your boss anyway?

23 A It was sent, yes.

24 MR. BLUM: All right. That's it, Your Honor.

08:44AM 25 THE COURT: All right. Mr. Gee.

## **CROSS-EXAMINATION**

2 | BY MR. GEE:

3 Q Good morning, Mr. Leserman.

4 A Good morning.

08:45AM 5 Q I'd like to display Exhibit 1419, which is the  
6 one that was just displayed.

9 A Yes.

08:45AM 10 Q And does it contain information from 2011 -- or  
11 2012? I'm sorry. Does it contain information from 2012?

12 A Yes.

13 Q And wasn't there -- didn't you do an evaluation  
14 of turnout anomalies that you testified to earlier?

08:45AM 15 A Yes.

16 Q And did that -- does this information include  
17 those anomalies?

18 A It does, yes.

19 Q Okay. And the information that you present to  
08:45AM 20 Mr. Stone, you wouldn't intentionally present him bad  
21 information, would you?

22 A No.

23 Q Okay. Thank you.

24 I'd like to display Exhibit 101, which was  
08:46AM 25 stipulated and displayed yesterday.

1 (Marked for identification and received  
2 into evidence Exhibit No. 101.)

3 Q BY MR. GEE: Mr. Leserman, do you remember that  
4 you discussed this -- this -- this exhibit yesterday?

08:46AM 5 MR. BLUM: Your Honor, is this admitted into  
6 evidence?

9 MR. GEE: Yes.

08:46AM 10 MR. BLUM: Okay.

11 | THE COURT: All right. You can present it.

12 MR. GEE: Let's turn to page 2 of the exhibit.

13 Q Mr. Leserman, do you see the subject matter of  
14 the letter?

08:46AM 15 A Yes.

16 Q What is Proposition 1 funding?

17 A Proposition 1 was a bond issue put before the  
18 voters in November of 2014, and it -- the purpose of it was to  
19 fund various water supply infrastructure and water quality  
20 projects.

08:47AM 20 projects.

21 Q And when did you request this funding initially?

22 A We submitted a pre-application in 2016.

23 Q And what project were you proposing in this --  
24 for this funding?

08:47AM 25 | A For VOC treatment of the flow from the Saugus 1

1 and 2 wells.

2 Q And is that the same Saugus 1 and 2 VOC treatment  
3 project that is the subject of this litigation?

4 A Yes.

08:47AM 5 Q And going back to page 1, why were you writing  
6 this e-mail to Mr. -- I'm sorry.

7 Why were you writing this e-mail to  
8 Mr. Jeff O'Keefe?

9 A Jeff is the director of the Los Angeles area  
08:48AM 10 offices of the Division of Drinking Water, and we were trying  
11 to solicit his support in perhaps appealing the denial of the  
12 pre-application.

13 Q Okay. And who was it that first suggested that  
14 the agency apply for Prop 1 funding for VOC treatment of  
08:48AM 15 Saugus 1 and Saugus 2?

16 MR. BLUM: Objection. Hearsay.

17 THE COURT: Sustained.

18 Q BY MR. GEE: Mr. Leserman, did you originally  
19 raise prop 1 funding for Saugus 1 and Saugus 2?

08:49AM 20 A The idea was brought to me by the staff at DDW.  
21 They strongly recommended that we apply for the --

22 MR. BLUM: Your Honor, this is hearsay and I move  
23 to strike.

24 THE COURT: I'm going to overrule it. And it's  
08:49AM 25 not being offered and should not be considered for the truth of

1 the matter but should be considered or can be considered by the  
2 members of the jury with respect to understanding the  
3 motivations of the water agency.

08:49AM 4 Q BY MR. GEE: Okay. Mr. Leserman, I just have one  
5 other topic to cover.

6 Yesterday you indicated that you worked at  
7 various water entities; is that correct?

8 A Yes.

08:49AM 9 Q And yesterday we discussed taking confirmation  
10 samples for uncharacteristic samples. Do you recall that?

11 A Yes.

12 Q Is SCV Water the only water entity that runs  
13 confirmation samples following an uncharacteristic sampling  
14 result, in your experience?

08:50AM 15 A No. In my experience, it's standard practice to  
16 get a confirmation sample on anything that's unusable.

17 MR. GEE: That's all I have for Mr. Leserman.  
18 Thank you very much.

19 THE COURT: Mr. Blum.

08:50AM 20 **REDIRECT EXAMINATION**

21 BY MR. BLUM:

22 Q Mr. Leserman, define "confirmation sample."

23 A It's a repeat sample.

24 Q It's an extra sample; correct?

08:50AM 25 A Extra, additional. Yeah.

1 Q And what the district does, they don't take an  
2 extra sample. They just wait until the next scheduled sampling  
3 event; correct?

4 A That's up to our lab. I can't answer that.

08:51AM 5 Q So you can't say whether or not there's actually  
6 an additional sample taken or whether you just wait until the  
7 next scheduled sampling event, can you?

8 A The samples are taken so frequently that, by the  
9 time the need for a confirmation sample would arise, it could  
08:51AM 10 very well be appropriate that the next scheduled sample could  
11 serve as a confirmation sample. But again, I'm not involved  
12 with that, so I can't tell you for certain.

13 Q How long does it take to get a sample -- a sample  
14 on spec?

08:51AM 15 A It's generally -- and again, I'm not working in  
16 the lab. But on the order of a few days to get a VOC sample.

17 Q Just two or three days?

18 A I'm not sure.

19 Q Is it less than a week?

08:52AM 20 THE COURT: Do you know?

21 Q BY MR. BLUM: Do you know?

22 A It probably is.

23 Q So -- and isn't it true that you can actually  
24 order your lab to do a rush job and get you one back in a day  
08:52AM 25 or two?

1 A I don't know.

2 MR. BLUM: Thank you, Your Honor.

3 THE COURT: You're excused, sir. Please watch  
4 your step going down.

08:52AM 5 THE WITNESS: Thank you.

6 THE COURT: And we remain in the defense case.

7 Mr. Blum, your next witness.

8 MR. BLUM: Your Honor, it's Mr. Gallagher's  
9 witness.

08:52AM 10 MR. GALLAGHER: Your Honor, the defense would  
11 call Tony Daus. Let me just step outside and find him.

12 THE COURT: All right.

13 THE CLERK: Good morning, sir. Would you please  
14 come forward. Would you please walk around and get up on the  
08:53AM 15 witness platform here.

16 Would you please raise your right hand to be  
17 sworn.

18 Do you solemnly swear that the testimony you  
19 shall give in the cause now before this Court shall be the  
08:53AM 20 truth, the whole truth, and nothing but the truth, so help you  
21 God?

22 THE WITNESS: I do.

23 THE CLERK: Thank you. Please be seated.

24 Sir, for the record, would you please state your  
08:53AM 25 name and then spell your last name.

1 THE WITNESS: My name is Anthony Daus, D-a-u-s.

2 THE CLERK: Thank you.

3 THE COURT: And, Mr. Daus, if you would please  
4 remove your mask while you're testifying and do make sure you  
08:54AM 5 are speaking into the microphone, similarly to what you are  
6 observing me do, please.

7 THE WITNESS: Yes, Your Honor.

8 THE COURT: You may proceed.

9 MR. GALLAGHER: Thank you, Your Honor.

08:54AM 10 **ANTHONY DAUS**

11 CALLED BY THE DEFENDANT, WAS SWORN.

## **DIRECT EXAMINATION**

13 BY MR. GALLAGHER:

14 Q Mr. Daus, you understand you were retained by  
08:54AM 15 Whittaker in this matter to provide certain opinions; correct?

16 A Yes.

17 Q Generally speaking, can you describe the opinions  
18 you provided or are going to provide in this matter?

19 A I was asked to analyze data, onsite data  
08:54AM 20 regarding remediation activities that were performed under  
21 Whittaker's purview and the efficacy of the groundwater remedy  
22 that has been implemented at the site.

23 Q And before I get into your qualifications as to  
24 why you are able to render these opinions, can you tell me why  
25 that is important in the overall analysis in this case?

08:55AM

1                   A        Well, it's important to understand the extent of  
2 the VOC plume, the contaminant plume, and the procedures and  
3 methods that were used to develop the remediation system and to  
4 implement the remediation system to essentially capture this --  
5 this release of contamination.

6                   Q        And for our benefit here, would you just give us  
7 a little bit of your background, training, and experience as to  
8 why you are qualified to render such opinions?

08:55AM

9                   A        Yes. I have an undergraduate degree in geology  
10 from the University of Missouri. That's where I got my first  
11 taste of doing groundwater work, groundwater investigation work  
12 on one of the old Manhattan project sites. I graduated in  
13 1981. From there, I went to the University of Waterloo in  
14 Canada. And people ask me why I went there. It was regarded  
15 as the premier school for contaminant hydrogeology. And that  
16 was what I wanted to study.

08:55AM

17                   During that period, I took a variety of classes,  
18 of course, and studied and wrote a thesis on the fate and  
19 transport, the migration of contamination in groundwater. I  
20 finished my master's degree in 1983 and subsequently moved to  
21 California. Upon finishing my master's degree, I was awarded  
22 the Pearson Medal for excellence in graduate research.

08:56AM

23                   In coming to California, I began working on  
24 Superfund sites and large groundwater contamination projects.  
25 My first project was in the Salinas Valley. It was a -- a

1 contaminated groundwater project. The contaminants included  
2 TCE as well as other compounds.

08:56AM

3 Q Quick question, not to interrupt. But you  
4 mentioned the term "fate and transport." Can you explain a  
5 little bit as to what you mean by that?

08:57AM

6 A Fate and transport is when these chemicals are  
7 released into the environment, how do they behave? Where do  
8 they go? How fast do they move? Can we understand and  
9 evaluate their migration? And my focus was in the subsurface  
10 so in soil and groundwater.

11 Q You can continue with your work experience.

08:57AM

12 A So in 1988, I moved from Northern California to  
13 Southern California, continued to work on groundwater projects,  
14 remediation -- the investigation and remediation of those  
15 projects, both in -- here in the U.S. as well as overseas. I  
16 worked on some of the largest groundwater plumes in  
17 Southern California as well as those in Brazil. I have worked  
18 on projects in Guam, Europe.

08:57AM

19 So I have had a fair amount of experience, both  
20 here in California and throughout the U.S. and overseas.

21 Q In terms of preparing for this case, did you  
22 review any materials and can you elaborate on what you  
23 reviewed?

08:58AM

24 A I reviewed a large list of documents that stretch  
25 back to the mid 1980s. And probably one of the key documents

1 that I looked at was the 1997 Acton-Mickelson report. That  
2 basically summarized the site conditions and the history of the  
3 site up through that period.

4 MR. GALLAGHER: If I may, Your Honor, it's  
08:58AM stipulated, publishing 1411.

6 THE COURT: Very well.

7 (Marked for identification and received  
8 into evidence Exhibit No. 1411.)

9 Q BY MR. GALLAGHER: Is this one of the documents  
08:58AM 10 you reviewed that you just mentioned?

11 A Yes. There are multiple volumes to this  
12 document. I believe there's six volumes.

13 Q What else did you do in terms of preparing for --  
14 to render your opinions today?

08:58AM 15 A Well, there are naturally a number of documents  
16 after this and before this. So there was a 1994 consent order  
17 that -- this was prepared under that consent order. And then  
18 the next major order was the Imminent and Substantial  
19 Endangerment Order. That was 2002. That precipitated a large  
08:59AM 20 amount of investigation and remediation work.

21 Q And the company you currently work for is?

22 A I currently work for GSI, GSI Environmental.

23 Q And do you have other colleagues that are  
24 familiar or work on the Whittaker site?

08:59AM 25 A Yes.

1 Q And they are?

2 A Dr. Hassan Amini, Miae Jeon. She's a PE, and  
3 she's the project manager.

4 THE COURT: Please make sure you give spellings  
08:59AM 5 with these names.

6 Q BY MR. GALLAGHER: Would you spell Miae's name?

7 A Miae is M-i-a-e. Jeon is J-e-o-n. Dr. Amini  
8 is -- first name is H-a-s-s-a-n. Last name is Amini,  
9 A-m-i-n-i. And there's a number of other staff that worked on  
09:00AM 10 the project as well.

11 Q And who is -- can you describe Hassan Amini's  
12 role in this -- at this site, if you know?

13 A Dr. Amini is essentially a program manager. So  
14 he helps direct other consultants who are working on the  
09:00AM 15 project. There's a number of sub consultants working on  
16 different aspects of the project. And Miae is the task  
17 manager. So she helps Dr. Amini keep track of different  
18 deliverables and helps implement various work tasks.

19 Q I understand for purposes of today you prepared a  
09:00AM 20 slide deck to assist us in understanding the work you have done  
21 and your opinions. Did you prepare that?

22 A Yes.

23 Q And you brought it with you today?

24 A Yes. I think you have a copy of it.

09:01AM 25 Q Without any objection, we are going to publish

1 that deck.

2 THE COURT: Let me hear the number, please, of  
3 the exhibit if you are marking it or have marked it as an  
4 exhibit. And you are representing that it's been stipulated to  
09:01AM 5 and you have provided it to the other side?

6 MR. GALLAGHER: We have and it has.

7 MR. GEE: We have seen it.

8 You plan on just displaying it and not entering  
9 it into evidence?

09:01AM 10 MR. GALLAGHER: That's correct.

11 MR. GEE: We have no objections.

12 THE COURT: It still needs to be identified.

13 MR. GALLAGHER: Yes. And I don't know -- it's  
14 next in line.

09:01AM 15 THE COURT: We can come back to that. But please  
16 make sure that counsel is prepared.

17 MR. GALLAGHER: For sure. Thank you.

18 Q Do you see it there, Mr. Daus?

19 A I do.

09:01AM 20 Q What I'd like to do is just run through some  
21 of -- well, why don't you tell me what you did to prepare this  
22 and we can go from there.

23 A I reviewed a large number of documents and  
24 prepared my opinions based on my review within the scope of my  
09:02AM 25 charge, which was to look at the onsite remedies and

1 particularly the groundwater remedy.

2 Q And I understand you prepared some background  
3 information to better understand these concepts; correct?

4 A Yes. The slide deck is broken up into two  
09:02AM 5 significant bits. So the first bit is sort of a Hydrogeology  
6 101 to help everyone understand some of the terminology that  
7 typically gets used in these kinds of projects. And then I  
8 will go into the opinions and the bases for those.

9 Q So I will jump ahead, and you tell me when to  
09:02AM 10 pause.

11 We talked about the scope of your investigation.  
12 Is that a fair summary here?

13 A Yes. That's a fair summary.

14 So really two primary areas, evaluate the  
09:03AM 15 groundwater remedial activities undertaken by  
16 Whittaker Corporation at the former Bermite facility in  
17 Santa Clarita, California, and provide an analysis regarding  
18 the effectiveness of the onsite groundwater-related activities  
19 and investigation and remedial activities done onsite.

20 09:03AM THE COURT: Please, when you're reading, slow  
21 down so the court reporter is able to copy down what you are  
22 saying.

23 THE WITNESS: Yes, Your Honor.

24 THE COURT: Thank you.

25 09:03AM Q BY MR. GALLAGHER: I'm going to jump ahead to the

1       Hydrogeology 101 that we just discussed. So you want to walk  
2       us through -- this comes after --

3                   A        Sure. I'm going to cover 11 general areas in  
4       Hydrogeology 101. And I will have slides for each of these. I  
09:03AM 5       don't think I need to read each of them. I think they will be  
6       self-explanatory.

7                   So the first slide is a cross section. So a  
8       cross section is a look at the ground -- if I were to cut the  
9       ground away, for example, if you're driving down the freeway  
09:03AM 10      and you see a large road cut, it shows you the geology, it  
11      shows you the layers. This is a cross section. And that would  
12      be similar to that road cut.

13                   So the ground surface is the top -- the brown  
14      colored area. We see a disposal area and there's some trees to  
09:04AM 15      give you some perspective.

16                   So as you go down through the unsaturated zone,  
17      the unsaturated zone is where the pores are not filled  
18      completely with water.

19                   Q        So just to jump in, so why is this such an  
09:04AM 20      important aspect of what we are doing when we are looking at  
21      the site?

22                   A        The primary charge that I had was to look at the  
23      efficacy of the groundwater remedy. So the groundwater has  
24      been impacted, and Whittaker undertook steps to mitigate that  
09:04AM 25      particular contamination. So it's the key -- one of the key

1 parts of the overall project.

2 So how does groundwater flow? It basically goes  
3 from higher elevation to lower elevation or from higher head to  
4 lower head. And this shows on the left-hand side a higher  
09:05AM 5 water level flows to the lower water level. Precipitation  
6 rains down on the ground and that percolates into the ground,  
7 forming the groundwater body.

8 Q And what impact does the soil have in terms of  
9 movement of contaminants?

09:05AM 10 A The soil is pretty important, obviously. So  
11 groundwater flow is faster in sand and slower in clay, as is  
12 kind of readily obvious. I think you line a pond with clay to  
13 hold the water up. Whereas, at sand, if you're at the beach,  
14 you see the water flows in and out of the sand relatively  
15 easily. That has to do with the permeability. That's the  
16 property of the soil that is a -- that gives me an idea of how  
17 fast water will flow through that soil.

18 Q What impact have -- well, I take that back.

19 Have you looked at the cross sections underneath  
09:06AM 20 the site as part of your analysis?

21 A Yes. The cross sections consist of layers of  
22 these course and fine grain or these more fine grain sediments  
23 that are lower permeability and the sandy zones, which are  
24 higher permeability.

09:06AM 25 So this is a cross section at the site. It's a

09:06AM

1 conceptual diagram, "conceptual" meaning that it's -- it's  
2 provided as an exhibit to show the general characteristics of  
3 the subsurface conditions. And it's built like a layered cake.  
4 So if you think of the icing as the fine grain material, that  
5 would be in brown. That would be a lower permeability zone.  
6 And the lighter color would be sort of the cake part of the  
7 layered cake and that's the sand. That's where water flows  
8 more freely.

09:07AM

9 Q Are we focused on any particular segment of the  
10 subsurface at the Whittaker site?

09:07AM

11 A Based on detailed analysis of subsurface  
12 conditions, we understand that S, which stands for Saugus, 3A  
13 is the most permeable of those zones which are impacted with  
14 the contamination. S3A is near the top of the cross section.  
15 That's two or three layers down.

16 Q When we are talking about a groundwater plume,  
17 can you elaborate on what that means? How does it operate,  
18 et cetera?

09:07AM

19 A Groundwater plume originates -- at least in this  
20 case originates from a source, and that's a defined area where  
21 contaminants or chemicals were released to the soil. Those  
22 contaminants or chemicals migrate through the soil down under  
23 gravity to the water table where they dissolve into the  
24 groundwater and create a groundwater plume.

09:08AM

25 Q Do contaminants move in a straight line? Have

1 you heard of this concept? Or how does it move in the  
2 subsurface?

3 A Well, the contaminants follow the most permeable  
4 pathway, but it moves under the influence of groundwater -- of  
09:08AM 5 the groundwater elevations. That gives you an idea of the  
6 direction. But importantly, it also follows the area of  
7 highest permeability.

8 Q So when you say "permeability," does it just go  
9 where the path of least resistance is?

09:08AM 10 A Yes. That's one way to summarize it. Under the  
11 motive force of groundwater, it will follow that path of least  
12 resistance.

13 Q Now, I have also heard in terms of natural  
14 attenuation, absorption, things like that. How is that  
09:08AM 15 relevant here when we're talking about VOCs?

16 A Well, these are factors that affect the  
17 groundwater plume, the dissolved plume. And there's a number  
18 of different natural attenuation processes. So natural  
19 attenuation affects the rate of plume migration. Some  
09:09AM 20 compounds are attenuated rather quickly and some are not. Some  
21 move very, very quickly.

22 So one of the first ones is called dispersion and  
23 dilution. And that's simply the mixing of the plume with  
24 cleaner water. So that takes the contamination levels down to  
09:09AM 25 lower levels, and that really affects any contaminant that is

1 released to the groundwater.

2 Q What are other ways natural attenuation occurs?

3 A Well, if we click to the next slide. There are  
4 chemical reactions that can occur in the subsurface, whereby  
09:09AM 5 these chemicals -- there's a little inset too. And it shows a  
6 typical organic compound that is in the groundwater. And there  
7 are -- there are non-biological reactions that will occur to  
8 break those compounds down.

9 Q What else can occur in the subsurface?

09:10AM 10 A Click to the next slide.

11 There's one called biodegradation.

12 Biodegradation are the presence of little bugs. And you can  
13 see the green little bug in that blowup of the soil. And it  
14 will eat the -- eat certain compounds. And it will eat certain  
09:10AM 15 compounds or certain chemicals faster or more effectively than  
16 others.

17 Q And we talked about absorption and retardation.

18 And that is relevant here, I believe; correct?

19 A Yes. That is certainly a relevant attenuation  
09:10AM 20 mechanism.

21 Q Can you explain a little bit about what what  
22 means?

23 A Absorption and retardation, it's really about how  
24 sticky the chemical is. So when these chemicals dissolve, they  
09:10AM 25 have certain -- certain attributes. And within a -- within the

1 soil, certain chemicals will absorb to the soil particles or  
2 clear organic matter in the soil particles and some will not.  
3 And each chemical has its own specific retardation coefficient.

4 Q And you have an understanding generally of the  
09:11AM 5 two major groups of chemicals -- I say "groups" -- that are at  
6 issue with the site; correct?

7 A Yes.

8 Q And those are?

9 A One are chlorinated solvents, TCE primarily and  
09:11AM 10 to a lesser degree PCE.

11 Q And we refer to those generally as VOCs or  
12 volatile organic compounds. Does that make sense? Do you  
13 understand that?

14 A Yes. And I will use the term VOCs. So it's  
09:11AM 15 volatile organic compounds. That includes TCE and PCE.

16 Q And what's the other chemical?

17           A         The other chemical is perchlorate, which is a  
18 salt. And so it's very different than an organic compound like  
19 VOC.

09:11AM 20 Q And can you explain for us the differences in  
21 terms of how the two chemicals, VOCs versus perchlorate, move  
22 in the subsurface?

23                   A            Sure. The next slide, I think, talks a little  
24                   bit to that.

09:12AM 25 So PCE is a -- is an organic chemical, as I said.

09:12AM

1 And it doesn't really like water. It's called hydrophobicity.  
2 It's hydrophobic. And PCE is more hydrophobic or likes water  
3 less than TCE. So if it has an opportunity to glom onto an  
4 organic, a little bit of organic matter that's on a sand grain,  
5 it will do that readily. And PCE will do that more readily  
6 than TCE.

7 So it has -- that will retard -- or as that  
8 chemical attaches to the soil, it slows down that plume. So  
9 that plume doesn't advance as quickly.

09:12AM

10 Q So in terms of timing, are you saying that  
11 perchlorate moves faster than the VOCs in the subsurface?

09:12AM

12 A Right. So when we get to perchlorate -- and  
13 that's an anion. And an anion would be something like  
14 chloride. That tends to have a very low stickiness. In fact,  
15 it's barely sticky at all and moves very, very quickly. Moves  
16 almost with the speed of groundwater itself.

17 Q I think you prepared a slide just to -- a  
18 demonstrative to show the differences between the movement and  
19 the subsurface, did you not?

09:13AM

20 A Yes.

21 Q Is this that slide? Can you explain it to us?

09:13AM

22 A So this is a demonstrative that shows how fast  
23 different contaminants travel. And I have plotted in a  
24 conceptual way three different plumes -- a perchlorate plume, a  
25 PCE plume, and a TCE plume. All three were released from a

1 source area.

2 They intercepted groundwater, which is moving  
3 from left to right. So the PCE and TCE are more sticky than  
4 perchlorate. That means they're going to stick to the soil.  
09:13AM 5 They're not going to migrate as fast; whereas, the perchlorate  
6 is quite mobile. It's not sticky at all, and it moves very,  
7 very quickly.

8 So what that means is that, depending on where I  
9 place a monitoring well, I can detect different compounds. And  
09:13AM 10 part of that may be due to the relative mobility or how fast  
11 those different compounds travel.

12 Q There's also been this concept of delineation  
13 discussed. Can you explain to us what you mean by delineation  
14 or what is meant by delineation?

09:14AM 15 A Delineation is a scientific process whereby we  
16 install monitoring wells and we identify where the groundwater  
17 is impacted. And it's an iterative process.

18 So we put in some wells, we get readings, then we  
19 put in additional wells based on that information. We know  
09:14AM 20 groundwater flow direction. And then we add additional wells  
21 to that to try and understand what the extent of that plume is  
22 of that -- of that groundwater contamination.

23 And then we attempt to -- or we draw a line. We  
24 infer between a dirty location or a non-detected location and  
09:14AM 25 an area where it has a detected compound. And we use different

1 methods to infer where that line would be -- would be located.

2 And that is the process of delineation.

3 Q And this is not something new. This has been  
4 done for some time now?

09:15AM 5 A This has been done for many, many decades.

6 Q Is this the standard way of delineating a  
7 groundwater plume?

8 A Yes. It is an iterative process, as I mentioned.

9 Because we are looking in the ground, so we have to put the  
09:15AM 10 well in, get the detection -- or get the result. And then from  
11 that and based on the groundwater flow directions, we decide  
12 where we need to put additional wells.

13 Q So you're saying it's not an overnight process?

14 A No, it's not. Not at all.

09:15AM 15 Q And what's the -- is there an average time it  
16 takes to delineate a groundwater plume?

17 A Really depends on the complexity of the sites.  
18 It's very site specific.

19 Q Can you explain to us the concept of soil vapor  
09:15AM 20 extraction and how that works?

21 A So soil vapor extraction is a well-known remedy  
22 or cleanup technology for soil. So if we go back to our cross  
23 section and the disposal area, VOCs may have been disposed  
24 there at some time in the past. And we found that over the  
09:16AM 25 years, back in the '80s, we found that, if we were to put a

09:16AM

1 vacuum in the soil, much like a vacuum cleaner, and we draw air  
2 through that impacted soil, these volatile organic compounds,  
3 much like gasoline, will -- will entrain themselves, will go  
4 into the air, and I can remove them from the soil using this  
5 vacuum that is applied to a well.

6 Q Groundwater extraction -- extraction, excuse me,  
7 also a term we have discussed, a process that has been  
8 implemented. Can you describe to us for the benefit of us what  
9 that means, how that works?

09:16AM

10 A Groundwater extraction is one of the groundwater  
11 remedies or a way to clean up groundwater that basically stops  
12 the plume from advancing. And the way it does that is you  
13 place a well within the plume, much like in this cross section  
14 that we have been looking at, you pump the water from that  
15 well. That draws contamination into the well and creates its  
16 own flow path.

09:16AM

17 So the groundwater is going to flow into those  
18 wells, and it's going to be removed. And then it's going to  
19 run through a treatment facility where those contaminants will  
20 be removed from the water. Then the water is discharged.

21 Q And I think you mentioned it can -- groundwater  
22 extraction -- influence the groundwater flow; correct?

23 A Absolutely.

09:17AM

24 Q Are we able to measure that in any discernable  
25 way or can you explain?

09:17AM

1 A Yes. The primary way that we measure that  
2 extraction is we look at the groundwater elevations. So the  
3 panel on the left shows a typical conceptual diagram of a  
4 groundwater flow diagram. It shows flow going from 100 feet to  
5 94 feet. So this is a -- this is a -- a head measurement.  
6 It's a groundwater contour map.

7 So this is the line -- these contour maps show  
8 the line of equal elevation of the -- of the groundwater in the  
9 subsurface. And the blue arrow shows the direction of flow.

09:18AM

10 Q So, in other words, we're looking at this from  
11 a -- if I can put it simply, groundwater flowing downhill?

12 A It's basically a slope.

13 Q And now with groundwater extraction, how does  
14 that influence things?

09:18AM

15 A So I have -- I have placed a groundwater  
16 extraction well within that same panel, that same left-hand  
17 panel. And here I add a groundwater extraction well. And I  
18 pump the groundwater. So it draws the water into the well and  
19 extracts it for -- for treatment.

09:18AM

20 Q I want to jump ahead a little bit because I think  
21 that covers the 101. Let's talk about your opinions now.

22 Can you describe -- or can you articulate your  
23 first opinion as it relates to containment?

09:18AM

24 A I have a -- that the plume was sufficiently  
25 delineated in order to implement the remedy, the groundwater

1       pump and treat remedy.

2           Q        And what did you do to come to that conclusion?

09:19AM

3           A        I looked at the groundwater data and the  
4       groundwater flow directions in their -- in their totality. So  
5       we look at both the historical and current groundwater  
6       conditions. And I evaluated whether there was sufficient  
7       information available to implement the -- implement the  
8       groundwater remedy. And I felt that there was.

09:19AM

9           Q        Did you look -- in the materials relied on, did  
10       you find any references to plume maps, et cetera?

11          A        There are a number of different plume maps. And  
12       in the groundwater monitoring ports, there's distributions of  
13       chemicals that shows at each location what the detection was  
14       in -- of those particular chemicals at that location.

09:19AM

15          Q        And in your review of those flow maps, did you  
16       come to any conclusions as it relates to the extent of the VOC  
17       plume?

18          A        The VOC plume in OU-3 and 4 has not left OU-4.  
19       That particular plume migrates from OU-3 over to OU-4 and has  
20       not -- has not left OU-4, the VOC plume.

09:20AM

21               Now, the perchlorate plume, unfortunately, has  
22       migrated well beyond the -- the -- the definition of OU-4, the  
23       boundaries of OU-4.

09:20AM

24          Q        In terms of this slide that we have up in front  
25       of us, what is the import of the slide?

09:20AM

1           A        This establishes what we call operable units.  
2       And this is a management tool that's done for large sites in  
3       order to make it more easy to manage. Oftentimes, these  
4       operable units have different properties or different sorts of  
5       sources. And it's really a management tool.

6           Q        I know we discussed briefly Saugus 3A. Why is  
7       that so important in your analysis?

09:21AM

8           A        Again, Saugus 3A carries the greatest amount of  
9       water. It flows the fastest, and it carries most of the mass  
10      of the -- of VOCs and of perchlorate. So it's a -- it's the  
11      area that has the highest levels of contamination and the  
12      greatest flow.

09:21AM

13                 And I think the -- we talked about permeability.  
14       The permeability of Saugus 3A is about twice as much or twice  
15       as high as Saugus 3C, which is the next aquifer zone, the next  
16       sandy zone below that.

17           Q        So in terms of containment, what did Whittaker do  
18       to contain the groundwater and the VOC plume?

09:21AM

19           A        Whittaker installed groundwater extraction wells  
20      in S-3A and in S-3C. And I will focus mostly on S-3A or Saugus  
21      3A. As I said, that's where the plume is its greatest, both in  
22      concentration and extent. And it has the highest permeability,  
23      which pretty much goes hand-in-hand.

09:22AM

24                 So this figure shows the operate -- and it's 3  
25       and 4, an outline of the site that's in the dash. And it shows

1 the detections of perchlorate, PCE, and TCE that were found in  
2 those wells at that particular time. And I believe this is the  
3 third quarter -- or it's September 2019 data.

09:22AM 4 Q And what was done to then assess and evaluate the

5 groundwater remedy at the site?

09:23AM 6 A There was a feasibility study that was prepared  
7 that evaluated all the different potential remedies that went  
8 out for public review. And then a RAP was prepared, a remedial  
9 action plan. From that remedial action plan, groundwater  
10 extraction wells were installed and pilot tested. They were  
11 pilot tested to see if they would be effective. Mainly pilot  
12 tested of the treatment system as well to make sure that it  
13 could treat the groundwater that was being drawn from the  
14 wells.

09:23AM 15 Q So the pilot test is simply confirming are these  
16 wells working as expected and intended; right?

17 A More than that, I think, is: Does the remedy --  
18 will the remedy perform as expected? And if it won't, can we  
19 make adjustments to it to make it work better?

09:23AM 20 Q And is that standard course when you are  
21 implementing a remedy such as this?

22 A It is when you are implementing a remedy for  
23 large sites. There are some things that don't require a pilot  
24 test that are more, I would say, stock-in-trade that are very,  
09:23AM 25 very well-known. But something this big and complicated, this

1 complex would require a pilot test.

2 Q And for this depiction, this slide here, can you  
3 explain to us what the significance between the colored dots  
4 are? And it looks like concepts of delineation are being set  
09:24AM 5 forth as well.

6 A So we have the map that we showed on the prior  
7 slide, and I have identified and color coded wells. So I don't  
8 have extraction wells located on this. It will come up on the  
9 next figure.

09:24AM 10 But this shows the groundwater detections greater  
11 than the MCL, the maximum contaminant level -- you probably  
12 heard about that so far in this trial, what the MCL is -- and  
13 groundwater that's detected below the MCL, which is a yellow  
14 dot. And then the green dots are non-detection, and this is  
09:24AM 15 for this particular round of monitoring.

16 Q In this green dash line that you have depicted  
17 there, is that your effort at delineating the plume or  
18 Whittaker's effort at delineating the plume?

19 A That would be my effort at delineating the plume  
09:24AM 20 based on those data from September 2019.

21 Q I think you mentioned extraction wells were  
22 installed as a result?

23 A Yes. So here, we see the blue boxes with the  
24 yellow circle -- the yellow highlight around them, and those  
09:25AM 25 are the extraction wells that were installed to arrest the

1 plume from potentially moving off -- offsite towards Saugus 1  
2 and 2.

3 Q And based on your review of the data, do you  
4 agree with the locations of those extraction wells?

09:25AM 5 A The extraction wells appear to be performing as  
6 they were -- as they were intended. They are -- they are  
7 removing the groundwater, and they have controlled groundwater  
8 flow directions onsite.

9 Q What effect does groundwater extraction and the  
09:25AM 10 rate of pumping have on your ability to contain a plume?

11 A The groundwater must be extracted at a rate  
12 sufficient to create that zone of capture that I mentioned  
13 earlier and to draw the water into the well. So it's really  
14 often called the hydraulic containment or groundwater  
09:26AM 15 containment.

16 So essentially, it stops the plume from any  
17 forward advancement beyond its current position.

18 Q And are these groundwater extraction wells, can  
19 you adjust the pump rate?

09:26AM 20 A The groundwater extractions can be adjusted.  
21 There may be a limit -- there is always a limit that's defined  
22 by the permeability and potentially by the construction of the  
23 well as to how much water can be removed from a particular  
24 well.

09:26AM 25 Q And is that a process that evolves, in other

1 words, you see what the results are and, if you need to make  
2 adjustments, you can? Is that something that happens?

3 A We can certainly make adjustments to pumping  
4 rates if we have the capacity within the wells. I believe  
09:26AM 5 these wells have that capacity. Also, if additional wells are  
6 required due to some effect that's being observed in the data,  
7 additional wells could be installed if they are needed at a  
8 later time.

9 So this is a very data driven process. It is a  
09:26AM 10 very well established scientific data driven process whereby we  
11 take measurements, we evaluate those measurements in the  
12 context of the objective. And if it's meeting the objective,  
13 then we continue to monitor because these things are not static  
14 in time. Things change over time.

09:27AM 15 Q We talked a lot about 3A. I know there's also  
16 been reference to 3C aquifer. Can you explain to us the  
17 significance of 3C and how that factors in?

18 A Well, 3C also has extraction wells. 3C is a much  
19 lower permeability and the plume is much smaller. There's --  
09:27AM 20 there's -- it has a much smaller footprint than in 3A.

21 Q The extraction wells that were put in by  
22 Whittaker, they impact both aquifers -- right? -- 3A and 3C I  
23 believe is what you just said?

24 A There are wells that impact 3A, and there are  
09:27AM 25 some wells that are screened in 3C.

1 Q Well, is it -- what's your understanding of the  
2 regulatory agencies and their involvement in this process?

3 A The regulatory agencies in this case, the  
4 Department of Toxic Substances Control, is a fundamental part  
09:28AM 5 of the process. So the -- the agency's review and comment on  
6 the activities that are proposed by the responsible party, in  
7 this case Whittaker. And oftentimes the water agency does not  
8 agree with the actions being taken or they do agree or they  
9 offer comments that -- something additional may be needed.

09:28AM 10 So it's a -- it's a back and forth. And it's  
11 part of the process of review, analyze, and make sure that --  
12 that things are being done in a way that satisfies the State of  
13 California, in this case the Department of Toxic Substances  
14 Control.

09:28AM 15 Q Going back to what we were just discussing about  
16 the extraction wells, can you describe what this demonstrative  
17 depicts?

18 A This demonstrative is a histogram or a bar  
19 chart -- sometimes called a bar chart -- that shows the amount  
09:28AM 20 of pumping on the left. Monthly totalizer refers to the amount  
21 of water that's being extracted. So the yellow are the S-3A  
22 wells. And I list the wells at the bottom that are being  
23 pumped. The blue represent the S-3C, or Saugus 3C, wells. So  
24 it's much lower pumping, fewer wells because the plume is not  
09:29AM 25 very large in S-3C. Most of the pumping and most of the impact

1 is in S-3A, and this reflects that.

2 Q Did you analyze the impact the extraction wells  
3 were having on groundwater flow?

4 A Yes, I did.

09:29AM 5 Q And I believe you have a slide on it. What does  
6 this demonstrative depict in terms of groundwater contours in  
7 3A?

8 A This is an August 2017 groundwater contour map.  
9 It shows the elevation of groundwater and its direction of  
09:29AM 10 flow. The direction of flow is the blue arrow that has the  
11 yellow outline. Those wells in blue are -- in sort of green  
12 shading are extraction wells. The wells that are not shaded  
13 are monitoring wells. And we see the site boundary in OU-4.

14 Q And you analyze, once the groundwater extraction  
09:30AM 15 took place, the impact on groundwater contours; correct?

16 A Yes. And this was at the beginning stages of  
17 groundwater extraction.

18 Q And does this slide depict the impact on the  
19 groundwater extraction in 3A?

09:30AM 20 A Right. This is the 2019 September water level  
21 elevation contours. And it shows a drawdown around those  
22 extraction wells, and it depicts a zone of capture. The  
23 groundwater is being captured. And this is -- and it shows a  
24 reversal in groundwater flow.

09:30AM 25 So what that means is that -- whereas the slope

1 before in OU-4 was going towards the offsite or towards  
2 Saugus 1 and 2, pumping from these wells has resulted in a  
3 reversal of that flow towards the wells.

09:31AM 4 Q Of course, you analyze and part of your opinions  
5 focus on the effectiveness of the groundwater remedy. Did you  
6 perform that analysis?

7 A Yes. This is part of that analysis.

8 So looking at the groundwater elevations and  
9 establishing the direction of flow -- since the groundwater  
09:31AM 10 will respond quicker than the concentration levels, the  
11 groundwater elevations and the analysis of those elevations is  
12 one of the first things that we look at in evaluating the  
13 effectiveness of a groundwater pump and treat remedy.

14 Q Part of that analysis, it looks like, involved a  
09:31AM 15 number of factors. And I believe this slide depicts it. Can  
16 you explain what was done, then, in your analysis?

17 A Here, I basically took those groundwater flow  
18 directions and I placed them on the contaminant distribution  
19 map for S-3A, Saugus 3A. And it shows that groundwater flow  
09:31AM 20 directions are moving from the wells that were non-detect or  
21 green dots towards OU-4, towards those extraction wells within  
22 OU-4. So it shows I'm collecting that groundwater under OU-4.

23 Q I know you have another opinion on delineation of  
24 the VOC plumes. What is that opinion?

09:32AM 25 A That the plume was sufficiently delineated to

1 implement the approved groundwater remedy.

2 Q And in terms of that analysis, what did you focus  
3 on?

4 A I focused on the groundwater quality data. I  
09:32AM 5 focused on groundwater flow direction. So some of the totality  
6 of the data, both over time and at the -- at the -- at the  
7 current time, at the present time.

8 Q Did you look at the site in terms of former areas  
9 of activity and sources of contamination?

09:32AM 10 A I looked at where those sources were, where the  
11 major sources were.

12 Q And does this slide depict some of the areas you  
13 focused in on in terms of source areas at the site?

14 A Yes. So there's two or three areas that seem to  
09:32AM 15 have the greatest amount of mass. Area 14, I believe, had the  
16 highest mass that was extracted with the soil vapor extraction  
17 system.

18 Q Do you know when that soil vapor extraction  
19 system was implemented at the site?

09:33AM 20 A I believe it ran through 2018 or maybe 2015.

21 Q Do you know when it first started?

22 A 2003 maybe.

23 Q In terms of the data, you looked at the data post  
24 groundwater extraction efforts; correct?

09:33AM 25 A I looked at the data during groundwater

1 extractions. So it's going on right now.

2 Q And what could you glean from that information?

3 And I believe this slide depicts some of that.

4 A This slide basically shows the groundwater  
09:33AM 5 concentrations in September 2019, and it shows that the sentry  
6 wells -- I often call them a sentry well, but that's in the  
7 yellow circle that's around the green. That basically tells  
8 me -- it's an indicator well that shows whether the remedy is  
9 working. So it's another level of measurement.

09:34AM 10 So we look at groundwater elevations. And we  
11 also look to see if the contamination is migrating beyond our  
12 containment area. So how we captured the plume is a two-level  
13 process, both with groundwater elevations, which is one  
14 independent measure, and then groundwater concentrations, which  
09:34AM 15 is a second independent measure.

16 Q How do you determine how many monitoring wells  
17 should be put in in any given situation?

18 A It's an iterative process that is based on  
19 groundwater flow directions and is based on the results of  
09:34AM 20 investigation. So all of these investigations start in a  
21 similar way. We install one or two wells. We install several  
22 more wells, understand what the concentrations are.

23 A You need at least three or more in order to get a  
24 groundwater flow direction. And based on that flow direction,  
09:34AM 25 we install additional wells. This process continues until you

1 have an adequate body of information, adequate knowledge to  
2 understand the plume behavior and the distribution of -- of  
3 contamination in the subsurface. That can often take multiple  
4 iterations.

09:35AM 5 Q We have also heard the term "sentry wells." What  
6 are they? What's their purpose?

7 A I often call them a sentry well. It's much like  
8 a military term, a sentry. It's kind of a guard well. We are  
9 using those wells to measure whether our -- our remedy is  
09:35AM 10 working or not.

11 Q And does Whittaker have sentry wells installed at  
12 or near the site?

13 A Yeah. I would say that the three wells in OU-4  
14 near the edge act as sentry wells. And to some extent, the  
09:35AM 15 wells that are offsite and to the east of or the west of OU-3.  
16 But the primary sentry wells would be RNW08B, PZ09B, and the MP  
17 well set.

18 Q And I believe you analyzed the data collected  
19 from those wells; correct?

09:36AM 20 A Yes. I have looked at that data over time and in  
21 the most recent results in 2019.

22 Q And does -- does this slide depict that analysis?

23 A Yes. This is a kymograph. And a kymograph is  
24 simply a groundwater concentration over time. And what I  
09:36AM 25 plotted are the perchlorate results, which are in yellow. The

1 PCE and TCE results. PCE is in green and trichloroethylene, or  
2 TCE, is in blue. And sometimes they overlap. So when they  
3 overlap, one will hide the other.

4 But in general, it shows that in my OU-4 wells on  
09:36AM 5 the left-hand side, we see RNW08B, PZ09B, and MP102. These are  
6 all wells that are screened in the Saugus 3A. And we see in  
7 those wells that a general contamination has been non-detected.  
8 There have been one or two instances where a very low detection  
9 has been found, but they have been ND over time.

09:37AM 10 Q In terms of and based on your analysis, has there  
11 been sufficient delineation of the VOC plume at the site?

12 A Yes.

13 Q And in your opinion, has that VOC plume left the  
14 site?

09:37AM 15 A No.

16 Q And the basis of that is your analysis of the  
17 groundwater flow and groundwater extraction systems and sentry  
18 wells?

19 A The groundwater data at the sentry wells,  
09:37AM 20 certainly, and the continued operation of the groundwater  
21 extraction system.

22 Q Now, with respect to working with the DTSC, do  
23 you know what the current status is of the remedy, the  
24 groundwater remedy?

09:37AM 25 A I believe we're in Year 4 of -- since the remedy

09:38AM

1 has been installed. I believe there's a five-year review  
2 coming up next year. It's going to be a continuous process for  
3 the long haul for -- for many years of monitoring, groundwater  
4 data, and reporting those data and looking to make sure --  
5 evaluating to make sure that those results continue to confirm  
6 that the remedy is doing its job.

7 Q And taking a step back, we talked about various  
8 OUs at the site, OU-1 through 7. Is that fair?

09:38AM

9 A There's seven OUs. OU-7 is the groundwater  
10 operable unit. The other six have to do with soil.

11 Q And in terms of the efforts in addressing the  
12 contamination, the soil, do you know what the current status is  
13 as it relates to the DTSC?

09:38AM

14 A I think the remediation of the soil has been  
15 completed and the Department of Toxic Substances Control has  
16 agreed that the -- that the work has been -- that the work has  
17 been -- that the soil remedy work has been done.

09:38AM

18 Q And in terms of when they agree that it's been  
19 done, that's not it; right? They don't pack up their bags and  
20 leave; correct?

21 A It's always subject to additional data or if  
22 there's additional findings that suggest something else has to  
23 be done, then that's certainly an option.

09:39AM

24 Q And the efforts that are currently still ongoing  
25 at the site, do you know what they are?

1 A The current efforts are mostly focused on  
2 groundwater remedy. And that includes the groundwater pump and  
3 treat and OU-4 as well as additional work being done in the  
4 Metrolink area.

09:39AM 5 Q Now, you have provided other opinions as it  
6 relates to the offsite migration as it relates to the Metrolink  
7 area. Do you recall that?

8 A Yes.

9 Q And what's your opinion as to the efforts being  
09:39AM 10 done up there?

11           A           So far, the efforts seem to be effective in  
12 reducing concentrations and -- but we're -- it's too early to  
13 tell. We are still in a monitoring program.

14 MR. GALLAGHER: Nothing further at this time,  
15 Your Honor.

09:39AM 15 Your Honor.

16 THE COURT: Mr. Gee.

## CROSS-EXAMINATION

18 | BY MR. GEE:

19 Q Good morning, Mr. Daus.

09:40AM 20 A Good morning.

21 Q It is Mr. Daus; is that correct?

22 A Yes, sir.

23 Q Mr. Daus, I have a few questions.

24 You said that the characterization of a  
09:40AM 25 groundwater plume is an iterative process; is that right?

1 A Yes. Typically it is.

2 Q Do you know when the Whittaker-Bermite site shut  
3 down?

4 A I believe it was 1984.

09:40AM 5 Q Okay. And in 1984 -- when did -- to your  
6 knowledge, when did the iterative process for the  
7 containment -- or the groundwater evaluation start?

8 A I believe there was groundwater samples taken  
9 from an onsite production well in the mid '80s. I can't recall  
09:41AM 10 the exact year. '85 or '86. The -- Whittaker was required to  
11 do a groundwater investigation several years after that, to  
12 start doing the groundwater investigation. So probably, in  
13 earnest, in the late '80s through the '90s.

14 Q Okay. And you mentioned that -- that usually the  
09:41AM 15 DTSC oversees and approves these programs with the regulated  
16 entities; is that correct?

17 A Yes.

18 Q And you mentioned that there was a consent order  
19 in 1994. Do you remember that?

09:41AM 20 A I believe that was the year 1994, yes.

21 Q Okay. And the consent order was a -- does the  
22 consent order require that the regulated entity and the  
23 regulator agree on a plan?

24 A That's part of the consent order, yeah. It's a  
09:42AM 25 mutually kind of agreed-upon scope of the work.

1 Q And so Whittaker and DTSC -- or I think it might  
2 have been DHS at the time -- agreed back in 1994 to a cleanup  
3 plan?

09:42AM 4 A They agreed to certain steps, undertake certain

5 steps, yes.

6 Q Okay. And the certain steps goes all the way up  
7 through cleanup, doesn't it?

8 A It should, yes, the consent order does.

09:42AM 9 Q Okay. And when did Whittaker get their closure  
10 on some of their OU-2 through 6 soil remediation?

11 A I believe the first one may have been in 2002,  
12 and it was a soil remedy. And then the other ones were more  
13 recent. I think I have it in my slide dec. But I believe they  
14 were in the last several years, last two years or something.

09:43AM 15 Q Between 2015 and 2019, does that sound about  
16 right?

17 A That's probably about right.

18 Q Okay. So the soil remediation took place or was  
19 completed some 21 years after the order came out. Is that  
09:43AM 20 typical, in your experience?

21 A Well, there were a number of different soil  
22 remedies that were required. There was some excavation. There  
23 was soil vapor extraction, as we mentioned before. And -- so  
24 it's a -- that also is an iterative process.

09:43AM 25 Q Okay. Are you familiar with a 2002 Imminent and

1 Substantial Endangerment Order?

2 A Yes.

3 Q What's the difference between a consent order and  
4 an Imminent and Substantial Endangerment Order in terms of  
09:43AM 5 whether the parties agree or not?

6 MR. GALLAGHER: Lacks foundation. Calls for a  
7 legal conclusion. Vague.

8 THE COURT: Do you know the answer to that  
9 question?

09:43AM 10 THE WITNESS: I don't off the top of my head,  
11 Your Honor.

12 THE COURT: Okay.

13 Q BY MR. GEE: Does a -- does Whittaker need to  
14 agree to having an Imminent and Substantial Endangerment Order  
09:44AM 15 issued to them?

16 MR. GALLAGHER: Lacks foundation. Calls for  
17 speculation.

18 THE COURT: Do you know the answer to that  
19 question? Are you familiar with an Imminent and Substantial  
09:44AM 20 Endangerment Order?

21 THE WITNESS: Yes, I am, Your Honor.

22 THE COURT: And approximately, throughout your  
23 career, how often have you confronted these orders?

24 THE WITNESS: Oh, I've confronted about half a  
09:44AM 25 dozen instances, maybe more, maybe eight.

1                   THE COURT: And are you familiar with the process  
2 in terms of their issuance?

3                   THE WITNESS: Yes. Sometimes the responsible  
4 party can have input on that order so they can be -- it will be  
09:44AM 5 a little bit back and forth.

6                   THE COURT: Ultimately, do you know whether it is  
7 issued unilaterally or is it by consent or do you not know?

8                   THE WITNESS: No. It's usually issued  
9 unilaterally by the regulator.

09:44AM 10                   THE COURT: All right. Please proceed.

11                   MR. GEE: All right.

12                   Q         And so, in 2002, Whittaker was actually given an  
13 order -- a unilateral order to conduct cleanup activities at  
14 the Whittaker-Bermite site. Is that your understanding?

09:45AM 15                   A         It was -- 2002 was the order, yes.

16                   Q         Okay. Mr. Daus, you mentioned fate and transport  
17 as being a primary mechanism for site cleanups.

18                   A         It's one of the factors you consider when  
19 developing your understanding of subsurface conditions, and  
09:45AM 20 then that ultimately leads to development of the remedy of the  
21 site cleanup.

22                   Q         Okay. And in order to determine which direction  
23 the groundwater flows, do you need monitoring wells?

24                   A         Yes.

09:45AM 25                   Q         And you mentioned that a monitoring well was

1       installed in 1987.

2           A        I think there was a plan to install monitoring  
3       wells. I don't recall the exact date that the monitoring well  
4       was installed, the first wells.

09:46AM 5           MR. GEE: Can you --

6           Q        I'm going to display Exhibit 168, which has been  
7       stipulated and admitted.

8                Okay. We will come back to that.

9                And so -- so -- so when do you believe that  
09:47AM 10       Whittaker had enough information to actually map the contour  
11       lines for -- at the Whittaker Bermite site?

12          A        When did they have enough information? I believe  
13       they had sufficient information to develop the RAP and the  
14       feasibility study, would have been late -- early 2000s. And  
09:47AM 15       then there was additional work that was done -- not 2000.  
16       About 2000 -- it would have been late 2000s. That's when  
17       the -- when the feasibility study and the RAP were prepared.

18          Q        Okay. So that was roughly about 15 years after  
19       the site shut down or maybe a little longer?

09:47AM 20          A       More or less.

21          Q        Okay. And does it usually take that long to --  
22       to characterize a -- a groundwater plume?

23          A        Certainly can. Some of the large Superfund  
24       sites. In Los Angeles, it's taken them many years to do that.

09:48AM 25          Q        Okay. Have you reviewed the history of the

1 installation of monitoring wells at the site?

2 A I have looked at when they were installed, yes.

3 I have tables for that.

4 Q Okay. And was the vast majority of the -- the  
09:48AM 5 groundwater monitors installed after -- after 2002?

6 A The large majority of them were installed after  
7 2002, yes.

8 Q Okay. And so it's fair to say -- is it fair to  
9 say that the groundwater characterization started, in earnest,  
09:48AM 10 after 2002?

11 A No. I think it started earlier than that. It's  
12 quite a depth to water. So there was some initial work done to  
13 identify what the contaminants were in groundwater. But the  
14 level investigation ramped up significantly after 2002.

09:49AM 15 Q Okay. Mr. Daus, you have done a lot of site  
16 investigations, have you not?

17 A Yes, I have.

18 Q And are you familiar with -- with the EPA goals  
19 under CERCLA for groundwater cleanup?

09:49AM 20 MR. GALLAGHER: Objection. Beyond the scope.

21 THE COURT: Overruled.

22 THE WITNESS: You will have to be more specific.

23 Q BY MR. GEE: Okay. Mr. Daus, does the EPA have  
24 guidelines articulated in the -- the regulations for the  
09:49AM 25 cleanup objectives for groundwater?

1                   A         The cleanup objectives are typically defined in  
2 the feasibility study in the RAP. It's all part of the -- of  
3 the CERCLA process. So under the NCP, they have specific, you  
4 know, ways of doing things that are outlined in that document.

09:50AM 5                   Q         Okay. And are you familiar with the 40 CFR,  
6 Section 300, that sequence?

7                   A         Yes. I have looked at that quite a bit.

8                   Q         Okay. And in there, there is a -- a goal for  
9 groundwater remediation that basically states that EPA expects  
09:50AM 10                  to return usable groundwater to the beneficial use whenever  
11 practicable within a time frame that is reasonable and given  
12 the particular circumstances of the site. Does that sound  
13 familiar to you?

14                  A         It sounds familiar, yes.

09:50AM 15                  Q         Okay. And what is the beneficial use for  
16 groundwater near -- near the Whittaker site, if you know?

17                  A         It's -- it can be used as drinking water.

18                  Q         Okay. And so are you aware that the -- that DDW  
19 has determined that the groundwater near the Whittaker-Bermite  
09:51AM 20 site is an extremely impaired source?

21                  A         I haven't evaluated that particular issue.

22                  Q         But are you aware of that?

23                  A         Only from kind of hearsay, but I'm not familiar  
24 with that -- with the documentation.

09:51AM 25                  Q         Okay. Are you familiar with the 97-005?

1 A Yes, I am.

2 Q Okay. And on the 97-005, the Department of  
3 Drinking Water can set the drinking water standards below the  
4 MCL. Is that your understanding?

09:51AM 5 MR. GALLAGHER: Your Honor, beyond the scope.

6 THE COURT: One second, please.

7 Sustained.

8 Q BY MR. GEE: What's the purpose of 97-005?

9 MR. GALLAGHER: Same objection, Your Honor.

09:51AM 10 THE COURT: Have you considered 97-005 at all in  
11 connection with the work you have done?

12 THE WITNESS: No, I have not, Your Honor.

13 Q MR. GEE: Okay. In order to come up with a site  
14 remedy, do you need to know what the applicable standards for a  
09:52AM 15 drinking water source is?

16 A The standard would be an appropriate -- the  
17 appropriate consideration, yes.

18 Q Okay. And when you evaluated the -- the -- your  
19 containment, did you stop at 5 parts per million for TCE and  
09:52AM 20 PCE?

21 A 5 parts per billion?

22 Q I'm sorry. Strike that.

23 Did you -- did you stop at 5 parts per billion  
24 for your evaluation?

09:52AM 25 A I looked at the groundwater qualities from the

1 sentry wells, as I mentioned, and they were ND or sporadic,  
2 very low detect. So I considered it as an ND would be my line  
3 of delineation.

4 Q And so, Mr. Daus, you mentioned that you -- your  
09:53AM 5 evaluation looked at contamination capture from OU-3 and 4, I  
6 believe you said, for contamination capture; is that correct?

7           A        I looked at that. I also looked at the other  
8 operable units that have a groundwater impact.

9 Q Okay. And did you do any evaluations as to  
09:53AM 10 the -- the plausible path -- or the pathways between the  
11 contaminated source and the impacted wells?

12 A I didn't extend my analysis beyond the site.

13 Q Okay. And you only evaluated data -- I believe  
14 you indicated in your deposition -- on site and in close  
09:54AM 15 proximity to the site; is that correct?

16 A Yes. That would be reasonable, yeah.

17 Q Okay. I would like you to assume that the  
18 Department of Drinking Water requires water to be served from a  
19 severely impaired site to be .5 ppb, parts per billion. Did  
09:54AM 20 your evaluation look at the offsite levels for groundwater down  
21 to that level?

22 MR. GALLAGHER: Incomplete hypothetical. Outside  
23 the scope.

24 THE COURT: I'm going to strike the first part of  
09:55AM 25 his question. And you can answer the second.

1 Did your evaluation look at the offsite levels  
2 from water down to that level?

8 Q BY MR. GEE: And you mentioned that the three  
9 wells to the -- on the western side of the Whittaker site is --  
10 is it your opinion that the groundwater extraction program  
11 is -- is causing those groundwater monitoring wells to have  
12 zero or non-detect reading?

13 A I think -- I'm sorry.

14 THE COURT: Did you object?

09:56AM 15 MR. GALLAGHER: I'm sorry, Your Honor. It's  
16 vague.

17 THE COURT: Overruled.

18 You can answer.

19 THE WITNESS: I'm not quite sure where you're  
09:56AM 20 going -- or I'm sorry, what the question is. Is the question  
21 did the groundwater extraction system cause those wells to be  
22 ND?

23 Q BY MR. GEE: Yes.

24 A They were ND before the groundwater extraction  
09:56AM 25 system was installed.

1 Q Okay. So in terms of them being not an ND, even  
2 before the extraction process, did those wells play into your  
3 evaluation as to whether the extraction process is effective?

4 A Well, other than there were a few sporadic hits,  
09:56AM 5 I believe, in NP-1. But the effectiveness of the extraction  
6 process is really more focused -- I think those wells continue  
7 to be ND, which is a very good sign.

8 But the groundwater extraction itself, the  
9 primary factor that I looked at in creating the inward  
09:57AM 10 groundwater flow was what I -- was what I was focused on. So  
11 that capture was -- was being -- being completed or was being  
12 done by those extraction wells.

13 Q Okay. And so you have no opinion as to -- do you  
14 have an opinion as to whether the contamination from the  
09:57AM 15 Whittaker-Bermite site could be the source of VOC contamination  
16 found in the Santa Clarita Valley Water Agency's extraction  
17 wells that are the subject of this litigation?

18 A I don't believe the VOCs have left the site, that  
19 the plume itself still remains on the site as being -- as being  
09:57AM 20 captured.

21 Q And that's based on data that you have reviewed  
22 since 2002 or -- that's based on the monitoring wells that you  
23 have evaluated on the site; is that correct?

24 A The monitoring wells and groundwater flow  
09:58AM 25 direction. Sort of the totality of data.

1 Q Okay. So you did evaluate -- you did evaluate  
2 groundwater flow directions, did you not?

3 A Well, it's part of the analysis. You look at all  
4 of the data, both groundwater flow and groundwater  
09:58AM 5 concentrations.

6 Q Okay. And so do you agree with the -- the  
7 concept that groundwater flows perpendicularly to the  
8 direction -- to the contour lines -- contour elevation lines?

9 A I think in -- in general, that is true.

09:58AM 10 Q Okay. And so -- and you did take a look at  
11 groundwater contour lines, both to the north and south of the  
12 Whittaker -- both to the north and south of those three  
13 extraction wells that you cited on the west side of the  
14 Whittaker-Bermite site?

09:59AM 15 A I looked at those groundwater flow directions  
16 near the three sentry wells that are downgradient of the  
17 extraction wells.

18 Q Okay. So you looked at the groundwater flow to  
19 the north and south of those three extraction wells?

09:59AM 20 A I focused mainly on the onsite groundwater flow  
21 directions.

22 Q Okay.

23 A Of the three onsite sentry wells? Sorry, I think  
24 I misunderstood.

09:59AM 25 Q Yeah. You called the three wells on the west

1 side sentry wells.

2 A Yes. Yes. I thought you may have said three  
3 extraction wells. I apologize.

09:59AM 4 Q All right. Now, have you evaluated the  
5 groundwater flow direction from all of the source areas to --  
6 or all the source areas at the site?

10:00AM 7 A I looked at the primary ones in OU-3 and 4 and  
8 certainly those in OU-5 and the Metrolink station. So the  
9 primary sources in OU-3 and 4 are to the east around OU-3, on

10 the eastern end of OU-3.

11 Q Okay. And what about OU-2?

12 A OU-2 -- I have to look at a map for the different  
13 OUs. It would help me kind of --

14 Q That's an OU to the -- primarily to the south.

10:00AM 15 A Right. To the south of OU-3.

16 Q Yeah.

17 A Yeah.

18 Q And was there a -- an area called the East Fork  
19 landfill? Do you recognize that name?

10:00AM 20 A It may be called a different area. If you have a  
21 map, I can take a look at it.

22 MR. GEE: I believe it's Exhibit 171. This was  
23 admitted and previously displayed.

10:01AM 24 Q So do you see -- do you see all these -- the  
25 areas where we have VOC plumes in green at the site?

1 A I do.

2 Q And there's some rather large green spots in  
3 OU-2. Do you see those?

4 A I see that, yes.

10:01AM 5 Q And did you -- did you evaluate whether those  
6 green spots were -- had been leaving the site at all?

7 A The direction that the contamination was  
8 migrating. I did look at the groundwater quality data that  
9 would have been to the west of that.

10:02AM 10 Q And how many wells did you look at to the west of  
11 the -- of OU-2?

12 A There's CW-22, and then there's an offsite well.  
13 I believe it's OSMW-1. That's to the west of that.

14 Q So two wells?

10:02AM 15 A And there's some other wells that are in kind of  
16 in between OU-3 and 2. So there's a -- there's a map that  
17 has -- that has other wells located on it. If we look at that,  
18 we can identify each one. But I think 22 which was pretty  
19 close to the boundary and downgradient of the large circular  
20 green area of OU-2.

21 Q Okay. Did you look at how many monitoring wells  
22 is actually located offsite of the Whittaker-Bermite site?

23 A No. I didn't count them up.

24 Q But you're familiar with their -- their  
10:03AM 25 locations?

1                   A        Um, I'm familiar with the ones that I looked at  
2 specific to the onsite containment but not to any large degree,  
3 no.

10:03AM 4                   Q        Okay. And did you -- let me ask the question in  
5 a different fashion.

6                                   Did you evaluate whether or not VOCs could  
7 migrate offsite from the multiple sources of VOC contamination  
8 at the site?

10:03AM 9                   A        I looked at the configuration of the plume and  
10 the plume characteristics. And based on that, I drew my -- my  
11 conclusions.

12                   Q        Okay. In one of your displays -- and I don't  
13 have the PowerPoint before me -- you actually drew a yellow  
14 circle around Saugus 1 and Saugus 2 when it came to VOC  
15 concentrations that indicated that the VOC concentrations were  
16 above the detection level. Do you recall that?

17                   A        I think I just labeled those with yellow to  
18 highlight them. I don't think it was -- that was the intent.

19                   Q        Okay. And are you aware as to whether or not  
20 Saugus 1 and Saugus 2 has VOC concentrations that are above the  
21 detection level?

22                   A        I have not looked at that.

23                   Q        Okay. I'd like to display Exhibit 1 -- before we  
24 do that, Mr. Daus, the -- you indicated that the extraction  
25 system began operation in 2018; is that right?

1 A 2017. It started in 2017 and ramped up over  
2 time.

3 Q Okay. And would the groundwater contours in a  
4 2019 map for OU-3A reflect the effluence of the groundwater  
10:05AM 5 extraction wells?

6 A Yes.

7 Q Okay. I would like to display Exhibit 190, which  
8 has been previously displayed and entered as an exhibit.

9 Mr. Hokkanen -- I'm sorry. I'm getting ahead of  
10:05AM 10 myself.

11 Mr. Daus, have you seen this before during your  
12 deposition?

13 A I believe I've seen this figure before, yes.

14 Q And the pink lines actually show perchlorate  
10:06AM 15 contamination, which is one of the contaminants that you  
16 indicated flows at a quicker rate than TCE and PCE  
17 contamination?

18 A Yes, it does.

19 Q And this drawing or this figure is somewhat  
10:06AM 20 consistent with your testimony that the wells -- the sentry  
21 wells on the west side of the -- of the site have little or no  
22 detection of perchlorate, as well as your TCE and PCE  
23 contaminants. Is that -- is that -- does that appear to be  
24 what's reflected here?

10:06AM 25 A Well, that's the way this figure is drawn. I'd

1 have to go and look at the data for perchlorate. I wasn't as  
2 focused on that as I was on the VOCs.

3 Q Okay. Here, we see some contour lines that  
4 actually point in the direction -- I'm sorry -- the direction  
10:07AM 5 that goes to the -- goes west -- southwest of the  
6 Whittaker-Bermite site. Do you see that flow direction here?

7 A I see that one that's drawn there, yes.

8 Q And the information that this was derived from  
9 was from -- it looks like an AECOM report. Do you know who  
10:07AM 10 AECOM is?

11 A I do.

12 Q Are they a reputable consulting firm?

13 A They do consulting work. They are -- I think  
14 they do -- do good work. I think they have a good reputation.

10:08AM 15 Q And do you know whether or not AECOM does work --  
16 or does work for the Whittaker Corporation?

17 A They do work for Whittaker, yes.

18 Q And they do work in the field of groundwater  
19 evaluations, do they not?

20 A They do groundwater work, yes.

21 Q Okay. And so do you have any reason to doubt  
22 that their work would be credible?

23 A I have problems with their contouring that they  
24 have done on their contour maps, and I have expressed that  
10:08AM 25 in -- I have shown that in my -- in my expert report. So I

1 don't believe that they have accurately or -- done the  
2 contouring.

3 Q You mentioned some -- some -- that there were  
4 some issues that you disagreed with. With the data that you  
10:09AM 5 disagreed with, would that impact -- would that have a  
6 significant impact as to the groundwater contours?

7 A They would on this map, yes.

8 Q And what -- as your -- the issues that you  
9 raised, are they to the -- all the contour lines or just  
10:09AM 10 specific contour lines?

11 A A large number of them onsite. Not the ones  
12 offsite. The ones onsite, on OU-4, I have strong disagreement  
13 with them about those.

14 Q Okay. And your showing disagreement is based  
10:09AM 15 on -- what's the basis of your disagreement?

16 A They didn't accurately plot the contours.

17 If you show me the original map that AECOM used,  
18 I can demonstrate that. From which I think Todd derived this  
19 map, I can show you where there's error.

10:10AM 20 Q Okay. And did you yourself draw a contour map in  
21 your report along the northern border of OU -- I believe that's  
22 OU-4?

23 A I did.

24 Q And I guess I recall some of the sites that you  
10:10AM 25 presented that stopped at the wells on -- on the west end --

1       west side. What disagreement did you have with the groundwater  
2       flow direction shown here?

3           A        They don't show the groundwater capture that's  
4       being -- that's being resulting -- or that's resulting from the  
10:11AM 5       groundwater extraction.

6           Q        And, for example, this -- this graphic was  
7       generated in 2019. Didn't you indicate that a 2019 contour  
8       line map would reflect the pumping of your extraction system?

9           A        Yes, it would, but this map does not reflect  
10:11AM 10      that.

11           Q        And why not?

12           A        It doesn't accurately present the contours.

13                If we go back to the original AECOM map that  
14       shows the data -- this doesn't show the actual data at the  
10:11AM 15       wells. It simply shows the interpreted contour lines that  
16       AECOM prepared. So if we go back to that original map, I can  
17       show you exactly what I'm talking about.

18           Q        Well, yeah. Unfortunately, I don't have that at  
19       the tip of my fingers.

10:11AM 20                But did you evaluate the perchlorate plume at  
21       all?

22           A        It wasn't the focus of my analysis. It was  
23       mostly on the VOCs.

24           Q        But wouldn't you -- since perchlorate is one of  
10:12AM 25       the contaminants at the Whittaker-Bermite site, wouldn't you

1 want to take a look at the flow migration of perchlorate to  
2 determine whether or not the VOCs would -- would go in a  
3 similar path?

10:12AM 4 A And I did plot the -- the perchlorate data, but I  
5 didn't really focus on that as I did on the VOCs. There was --  
6 this is mostly a VOC -- pardon me -- a VOC containment issue is  
7 what I looked at.

10:12AM 8 Q Okay. There are some opinions by some of the  
9 other -- the three other hydrogeologists that are our experts  
10 in this case.

11 The first opinion is that perchlorate and VOCs  
12 are generally located in the same source areas at the  
13 Whittaker-Bermite site. Do you agree with that?

14 A I think we see some correlation of those, yes.

10:12AM 15 Q Okay. And another opinion that the experts share  
16 is that generally perchlorate and VOC contamination will flow  
17 in the same general flow paths. Do you agree with that?

18 A They will follow groundwater flow directions to a  
19 degree. Remember, you have to layer on top of that the --  
20 the -- the hydraulic conductivity and the geologic conditions.

21 Q Okay. Mr. Daus, you earlier mentioned, you know,  
22 soil vapor extractions conducted at the Whittaker-Bermite site;  
23 is that correct?

24 A Yes.

10:13AM 25 Q And that was done by CDM Smith. Do you know?

1 A I think they did part of it. I believe there may  
2 have been -- I don't know exactly who the different contractors  
3 were. But CDM Smith did a fair amount of it, yes.

10:14AM

4 Q Okay. And do you know how much VOCs that they  
5 found in the soil beneath the different -- at the  
6 Whittaker-Bermite site?

7 MR. GALLAGHER: Outside the scope, Your Honor.

8 THE COURT: Outside the scope of what?

10:14AM

9 MR. GALLAGHER: His expert report and his prior  
10 testimony.

11 THE COURT: Is that correct, Counsel?

12 MR. GEE: I'm not sure. He did discuss VOC  
13 contamination in the soil and the remediation.

14 THE COURT: I'm going to allow it.

10:14AM

15 THE WITNESS: I have a table that summarizes the  
16 amount of VOCs that were extracted with the SVE, but I didn't  
17 review the -- any prior estimates of mass.

18 Q BY MR. GEE: And how much VOCs were extracted?  
19 Do you know?

10:14AM

20 A I'd have to add them up, but it's in table --  
21 maybe Table 1 of my expert report.

22 Q Okay. Would -- would the extraction of  
23 approximately -- of -- do you know if it was more than  
24 100,000 pounds?

10:15AM

25 A Off the top of my head, I would say it's probably

1 less than 100,000 pounds or in that neck of the woods. That's  
2 certainly possible.

3 Q Okay. Do you know if there's any VOCs left over,  
4 remaining in the soil at the Whittaker-Bermite site?

10:15AM 5 A I suspect that there are some pockets of VOCs  
6 that may be left.

7 Q Okay. And what happens to those VOCs that are  
8 left in the soil? Do they just -- do they migrate anywhere?

9 A They'll volatilize over time. Pardon my  
10 Canadian. They will volatilize over time.

11 Q Okay. And so the VOCs that are just above the  
12 groundwater will volatilize too?

13 A They will slowly volatilize and create a vapor  
14 plume or vapor -- they will generate vapors.

10:15AM 15 Q Okay. Will any of that go into the groundwater?

16 A It's certainly possible, yes, depending on how  
17 high they are and where they are in the soil.

18 Q And did you consider the possibility that VOCs in  
19 the soil will migrate down into the groundwater in your  
20 evaluation?

21 A The groundwater containment system should contain  
22 any VOCs, any residual VOC that may be associated with the  
23 source.

24 Q Okay. And you mentioned that the VOC -- again,  
25 the system started up in 2017. And you mentioned that the

1 Whittaker-Bermite site shut down in 1984. So we're looking at  
2 approximately 34 years between the shutdown of the site and --  
3 and the -- and the startup of the groundwater extraction  
4 system.

10:16AM 5 Do you have enough information to determine what  
6 may have left the site prior to all the soil vapor extraction  
7 and groundwater monitoring that started up in 2002?

8 A I think based on the plume, the mechanics, how  
9 the plume migrates and the plume distribution, yes.

10:17AM 10 Q Okay. And you mentioned that the sentry wells on  
11 the west side of the Whittaker site shows very low readings of  
12 VOCs. And apparently it seems to, according to this drawing,  
13 have fairly low concentrations of perchlorate.

14 Do you have enough information along the northern  
15 border of OU-3 to make a determination as to whether or not  
16 VOCs could be migrating off the northern portion of the  
17 Whittaker-Bermite site?

18 A I believe you meant OU-4.

19 Q I'm sorry. OU-4.

20 A Well, there's a well up there, CW-01, that is  
21 screened NSW -- or N Saugus 3A that has been ND for VOCs. It's  
22 had low detections for perchlorate. And that falls, oh, just  
23 along -- pretty much along that green flow arrow. So  
24 unfortunately, this map doesn't show that offsite well.

25 Q Okay. But there is perchlorate in that well?

1 A Low levels, yes, I believe so.

2 Q Like there's low levels in the sentry well site  
3 that you have identified.

10:18AM 4 A Yes. And you have to look at the -- I think I  
5 have the kymographs plotted as well for those wells. So we can  
6 look at the perchlorate over time in all of those wells.

10:19AM 7 Q Okay. My last set of questions is: Did you look  
8 as to whether or not the onsite extraction system would have an

9 impact on contamination that has already reached Saugus 1 and  
10 Saugus 2?

11 A I didn't look at any impacts that far offsite. I  
12 really was focused on the onsite containment. So I didn't  
13 consider Saugus 1 and 2 in my analysis.

14 MR. GEE: Okay. That's all I have.

10:19AM 15 THE COURT: Let me just -- before you have  
16 redirect, Mr. Gallagher, I do want to ask just -- when you say  
17 that perchlorate and VOCs are generally located in the same  
18 source areas at the Whittaker-Bermite site, just explain to the  
19 jury, please, what you mean by that.

10:19AM 20 THE WITNESS: What I mean by that? Well, there  
21 are some disposal areas where I think they are co-located. I  
22 believe it's Area 14 is one, for example, or there may have  
23 been areas where they were -- where the waste was disposed at  
24 the same location.

10:19AM 25 THE COURT: Thank you.

1                   All right. Mr. Gallagher, redirect.

2                   MR. GALLAGHER: Thank you, Your Honor.

3                   Can we pull up Exhibit 190.

4                   **REDIRECT EXAMINATION**

10:20AM 5                   BY MR. GALLAGHER:

6                   Q           I would like to show you Exhibit 190. It's  
7                   already been shown to you. And you mentioned there is an  
8                   original map. I would like to, before we do, make sure it's  
9                   okay, Exhibit 392, page 98. I don't know if that's been  
10                   stipulated to, but I believe that's the original map.

11                   A           Counsel, I think this is the third quarter one  
12                   that you have. I think the one that was shown may have been  
13                   the second quarter. May have been May, June.

14                   Q           I will try to find that. Do you recall if it was  
10:20AM 15                   on your slides?

16                   A           No. I had the September one on my slides.

17                   Q           We will get back to that, see if we can find it.

18                   You recall Mr. Gee asking you a number of  
19                   questions about the status of various activities as it relates  
10:21AM 20                   to DTSC and whether or not certain things have been, for lack  
21                   of a better term, closed. Do you recall that?

22                   A           Yes.

23                   Q           All right. Can we show Exhibit 13 -- I'd like to  
24                   show Exhibit 1316.

10:21AM 25                   MR. GALLAGHER: And there's a series of documents

1 that I'd like to show the witness that identifies the various  
2 closure activities at the site.

3 THE COURT: And please do indicate whether, when  
4 you're introducing something new, if it has been stipulated to.

10:21AM 5 MR. GALLAGHER: I believe it has. I just want to  
6 confirm because it just came up.

7 Any objection?

8 MR. GEE: No. It's stipulated, Counsel.

9 MR. GALLAGHER: All right. Just making sure.

10:21AM 10 (Marked for identification and received  
11 into evidence Exhibit No. 1316.)

12 MR. GALLAGHER: Can we show 1316, please?

13 Q Do you see this document?

14 A I do.

15 10:22AM Q Do you recognize this document as part of your  
16 review in preparing for your opinions today?

17 A Yes, I do.

18 Q Okay. And can you describe for us what it is?

19 A 10:22AM This is a letter to Dr. Amini, who I mentioned  
20 earlier, that essentially gives the approval of the remedial  
21 action completion report. So they prepared a report that  
22 essentially says we have completed the remedial actions that we  
23 had specified to do under the RAP, four operable units, 2  
24 through 6.

25 10:22AM Q And the significance of this I believe we

1 discussed, but if you could briefly summarize what this means.

2 A This basically means that what the -- that the  
3 work that was done was completed and that no further work is  
4 required at this time.

10:22AM 5 MR. GALLAGHER: Next exhibit is 1317. It has  
6 been stipulated to.

7 (Marked for identification and received  
8 into evidence Exhibit No. 1317.)

9 MR. GEE: Counsel, I believe it's for ID only.

10:23AM 10 MR. GALLAGHER: It was stipulated to.

11 THE COURT: Is there an objection, Mr. Gee?

12 MR. GEE: No. This is fine.

13 THE COURT: All right. 1317 will be received  
14 without objection.

10:23AM 15 MR. GALLAGHER: Thank you.

16 Q And do you recognize this document?

17 A I do.

18 Q And did you look at it as part of your review for  
19 your opinions today?

20 A I did.

21 Q What is the import of this document?

22 A It basically specifies that the remedy  
23 implementation is complete in operable Unit 7. That was the  
24 permeable reactive zone. And operable Unit 7 -- this part of  
25 operable Unit 7 is the northern alluvium, so it is in that

1 Metrolink area.

2 Q And the significance of this in terms of DTSC  
3 oversight, do you have an understanding?

10:23AM 4 A DTSC has stated that the work that was proposed  
5 has been completed.

6 MR. GALLAGHER: And the next exhibit that has  
7 been stipulated to is 1390.

8 (Marked for identification and received

9 into evidence Exhibit No. 1390.)

10:24AM 10 MR. GEE: We had an objection, but it's fine for  
11 you to bring it up. I think we might have withdrawn it.

12 THE COURT: It will be received.

13 Q BY MR. GALLAGHER: And do you recognize this  
14 document?

10:24AM 15 A Yes.

16 Q And did you look at this document as part of your  
17 preparation for your opinions today?

18 A I did look at this document, yes.

19 Q And what's the import of this document, if any,  
10:24AM 20 as part of your analysis?

21 A It's basically a soil vapor extraction progress  
22 report.

23 Q Any significant takeaways or any import to it in  
24 terms of your analysis?

10:24AM 25 A I'd have to look at the document a little more

1 closely.

2 Q Do you know if it indicated the success or  
3 otherwise of the extraction system?

4 A This would be the right -- the right time frame  
10:25AM 5 for that, yes. It would form for the -- part of the basis for  
6 that remedy completion report.

7 Q And do you know if the soil vapor extraction  
8 system continues, as we sit here today?

9 A I believe they're done.

10 10 MR. GALLAGHER: And we will move on to the next  
11 exhibit, Exhibit 1424, which has been stipulated to as well.

12 (Marked for identification and received

13 into evidence Exhibit No. 1424.)

14 THE COURT: Before you move on, could you  
10:25AM 15 explain, if you know, the scope of the -- the soil vapor  
16 extraction remedy. Was it across the site and only across the  
17 site?

18 THE WITNESS: It would have been in areas that  
19 were identified as source areas. So it's a method for  
10:25AM 20 extracting or cleaning up sources above the water table for  
21 VOCs.

22 THE COURT: All right. Let me just start with  
23 maybe a slightly different question.

24 Was the soil vapor extraction remedy implemented,  
10:25AM 25 as far as you know, on any location outside the

1 Whittaker-Bermite site?

2 THE WITNESS: I believe they're only onsite.

3 THE COURT: And so this was just where in  
4 operable Units 1 through 6 where it was called for in a sense  
10:26AM 5 and approved?

6 THE WITNESS: It was -- it would have been  
7 identified in the remedial action plan as well as the goals,  
8 and those goals are particularly to protect human health and  
9 and environment.

10:26AM 10 THE COURT: All right. You can continue.

11 MR. GALLAGHER: Yes, Your Honor.

12 Next exhibit is 1424. It was stipulated to.

13 MR. GEE: Yeah, it's stipulated, Counsel.

14 MR. GALLAGHER: Thank you.

10:26AM 15 Q Have you reviewed this document as part of your  
16 preparation for today's opinions?

17 A I have looked at this document, yes.

18 Q And can you tell us what the import of it is?

19 A It's essentially the draft soil remediation  
10:27AM 20 closure report. It's a comment letter back from DTSC.

21 Q Do you know when the remediation began in OU-1?

22 A I can't recall off the top of my head, no.

23 Q Do you know if it was in the 1990s?

24 A There's been remediation done at many of these  
10:27AM 25 different levels, either soil excavation in some way, shape, or

1 form, so that wouldn't -- that wouldn't surprise me that it's  
2 in the mid '90s, in that neck of the woods.

3 Q Do you know if the DTSC has any involvement  
4 following this letter of June 2010 in terms of monitoring  
10:27AM 5 activities otherwise with OU-1 and the soil?

6 A I believe that they're done with the soil -- with  
7 the soil remedy. All the work has been done.

8 MR. GALLAGHER: Next exhibit I'd like to show you  
9 is 1425. It was stipulated to.

10:28AM 10 MR. GEE: Yes. It was stipulated to.

11 THE COURT: Is there an objection to 1425? And I  
12 would appreciate counsel not communicating with each other. I  
13 just simply need to know whether it's stipulated to or whether  
14 there's an objection so, when it's identified, Mr. Gee, either  
10:28AM 15 say "objection" or it's going to get received.

16 MR. GEE: Yes, Your Honor. We have these large  
17 tables of exhibits. So sometimes it takes a few minutes to --

18 THE COURT: I do understand. Just ask for a  
19 moment if you need. I'm just trying to move this along  
10:28AM 20 consistent with your ability to properly review.

21 Is there an objection to 1425?

22 MR. GEE: No.

23 THE COURT: It will be received.

24 MR. GALLAGHER: Thank you, Your Honor.

10:28AM 25 ///

1 (Marked for identification and received  
2 into evidence Exhibit No. 1425.)

3 Q BY MR. GALLAGHER: Have you seen this document  
4 before?

10:28AM 5 A I have.

6 | O And what is it?

7 A It's the approval of the remedial action  
8 completion report, sometimes called a RACR for operable unit 1.

9 Q And what's the import for having an approval of a  
10 completion report or RACR?

11 A It basically says you have done everything you  
12 have specified in your RAP, in your remedial action plan.

13 MR. GALLAGHER: And the last exhibit is 1426. I  
14 do believe it was stipulated to, but I'd like to confirm.

10:29AM 15 MR. GEE: We are fine with that.

16 THE COURT: It will be received.

17 MR. GALLAGHER: Thank you, Your Honor.

18 (Marked for identification and received  
19 into evidence Exhibit No. 1426.)

10:29AM 20 MR. GALLAGHER: This is the last document in the  
21 series.

22 Q Do you have an understanding as to what this  
23 document is?

24 A Again, it's similar to the last one. It's the  
10:29AM 25 approval of the RACR or the remedial action completion report

1 for operable units 2 through 6.

2 Q And these completion reports that you just  
3 reviewed or approvals of these completion reports that you just  
4 reviewed, they're for OU-1 through -6; correct?

10:29AM 5 A Yes.

6 Q And I think it also touched on OU-7; correct?

7 A And parts of OU-7, yes.

8 Q Moving on, I believe Mr. Gee started to address  
9 the concept of a detached plume. Do you recall that  
10 discussion?

11 A Yes.

12 Q Okay. Do you have an opinion as to whether or  
13 not there's a de -- evidence of a detached plume at the site or  
14 offsite?

10:30AM 15 A I see no evidence of a detached plume nor the  
16 conditions that would create a detached plume.

17 Q And for the benefit of all of us, can you just  
18 describe what the concept of a detached plume is?

19 A So a detached plume would be a pulse or a slug of  
20 contamination that is released to the groundwater that moves  
21 out ahead of the source area, is cut off from the source, and  
22 continues to move such that there is a separate entity or a  
23 separate plume that's detached from the source. And it would  
24 require very specific conditions for that to actually occur.

20:30AM 25 So you would have to separate the source from the rest of the

1 plume. That just wasn't done.

2 Q And how do you know that as you sit here? What  
3 data or evidence is there that there is no such detached plume?

4 A Well, I would look for the -- the separation of  
10:31AM 5 the source area from the rest of the plume that the -- you have  
6 to remember these compounds are very sticky, PCE and TCE. They  
7 stick to the soil very, very well. They will kind of linger in  
8 the soil. It's a long-term process to get those out of the  
9 soil, particularly in the groundwater. And so they don't --  
10 they don't just flush through the soil easily. And I don't see  
11 the conditions that would have resulted in that source area to  
12 be separated from the plume that would originate from that  
13 source area.

14 Q In other words, you don't truly see a detached  
10:31AM 15 plume. Are you saying, then, that you're going to see evidence  
16 of connecting two plumes?

17 A Yes. There should be a trail. There should be  
18 a -- for lack of a better word, there should be a pathway that  
19 should be evident from the source to the plume that originates  
10:32AM 20 from that source.

21 Q And is that due to the nature of VOCs?

22 A Due to the nature of the VOCs and due to the  
23 nature of the work that's been done and of the geology itself.  
24 So it's a total package.

10:32AM 25 Q Going back to -- can we pull up Exhibit 171? No.

1 Sorry. Strike that. 190. It's admitted and stipulated to.

2 Turning back to this quickly, and then we will  
3 wrap this up. This map was prepared by whom?

4 A It looks like it was prepared by  
10:32AM 5 Todd Groundwater.

6 Q Okay. In September 2020?

7 A It's dated September 2020 based on the May, June  
8 2019. Let me back up for a second. It's very interesting.  
9 You don't see a detached plume in this representation. There's  
10 no detached plume.

11 Q That was going to be my question. Do you also  
12 see that the VOC plume, specifically TCE, has been delineated?

13 A This is the perchlorate and TCE map. It appears  
14 that they have drawn a -- a plume, yeah.

10:33AM 15 Q And even with their interpretation of the TCE  
16 plume, is that plume still within the western boundary of the  
17 site?

18 A Certainly the TCE plume is, yes.

19 MR. GALLAGHER: Nothing further.

10:33AM 20 THE COURT: Mr. Gee.

21 **RECROSS-EXAMINATION**

22 BY MR. GEE:

23 Q Mr. Daus, I believe counsel asked you whether  
24 there was evidence of a detached plume both onsite and offsite.

10:33AM 25 Do you recall that?

1 A He said, is there evidence of a detached plume  
2 offsite?

3 Q And your evaluation, though, I believe you  
4 testified that you only considered onsite and the immediate --  
10:33AM 5 the area immediately next to the onsite; is that correct?

6 A Yes. I looked at the plume definition, the plume  
7 delineation, and it shows what the delineation of that plume  
8 is, whether it's a TCE plume.

9 Q And you didn't look at any evidence of a detached  
10 plume, for instance, beyond Saugus 1 and Saugus 2; is that  
11 correct?

12 A I looked at the evidence onsite for a detached  
13 plume and did not see that either in the monitoring data, at  
14 sentry wells, or in the work that was conducted on the site. A  
10:34AM 15 detached plume is a very rare circumstance. It's often been  
16 cited as a potential to explain something that people have a  
17 hard time trying to understand.

18 It's a -- it requires very specific conditions.  
19 It requires that the source be remediated faster than the  
10:34AM 20 groundwater plume such that I have this plume that's  
21 disconnected. I have clean water behind this plume that's  
22 migrated off the -- off the -- off the source area and kind of  
23 away from the source area. It's a -- it's, like I said, it's a  
24 very rare kind of an occurrence.

10:35AM 25 Q Okay. And counsel read to you some completion

1 reports. Do you recall that?

2 A Yes.

3 Q And basically the completion report indicates  
4 that the regulated entity has done what it said it was going to  
10:35AM 5 do in its cleanup plan; is that correct?

6 A It's the completion of the remediation action  
7 plan, yes.

8 Q And you testified earlier that there remains some  
9 VOCs in the soil beneath the site.

10:35AM 10 A No. I said there could. Oftentimes, the  
11 remediation is not 100 percent complete, but it's complete  
12 enough to protect groundwater and human health and the  
13 environment.

14 Q But wouldn't another interpretation of -- let me  
10:35AM 15 back up.

16 Do you know what a risk-based closure is?

17 A A risk-based closure is along those lines, yes.

18 Q And that's a common concept, isn't it, for site  
19 cleanups?

20 A Yes, it is.

21 Q Does a risk-based closure mean there is no risk  
22 after cleanup?

23 A It means that it meets the acceptable threshold  
24 for risks.

10:36AM 25 Q Okay. And in certain circumstances, isn't the

1 risk of the remedy greater than leaving the contamination in  
2 place?

3 A In certain circumstances is the risk of the  
4 remedy greater than leaving? I think I'd have to think about  
10:36AM 5 that particular condition. I think it really depends on a  
6 site-specific condition. For example, if I had a spill in a  
7 creek, sometimes the oil, they would leave it in place because  
8 the remedy would be to tear up the creek, and they don't want  
9 to do that. So it depends on the contaminant and depends on  
10:36AM 10 the specific application.

11 Q And do you -- you reviewed the site conditions as  
12 part of your work, did you not?

13 A I looked at the site conditions, yes.

14 Q And do you know how far it is from the surface of  
10:36AM 15 the site -- for example, in area 14, do you know what the  
16 distance is from the soil at the site down to groundwater?

17 A From the surface of the site to groundwater, I  
18 don't recall the exact depth.

19 Q But approximately -- do you have an approximate  
10:37AM 20 estimate?

21 A Not without looking at my documents.

22 Q Okay. What about in the Burn Valley area? Do  
23 you have an approximate estimate of the distance between the  
24 surface and groundwater?

10:37AM 25 A Same answer. I'd have to look at my documents.

1 Q All right. Well, would it be -- would it be more  
2 than 100 feet?

3 A I believe it's more than 100 feet, yes.

10:37AM 4 Q Okay. So in certain circumstances, would it be  
5 more risky to excavate soil down to 100 feet to remove some  
6 contamination than to actually remediate it?

7 A Well, that's the beauty of soil vapor extraction.  
8 I don't have to excavate it. I can remove it using these vapor  
9 extraction wells.

10:38AM 10 Q Okay. So you don't recall what -- what level of  
11 VOCs are remaining in the soil, and you have no opinion on  
12 that.

13 A I would have to look at the documents.

14 Q Okay. All right. But without looking at it, as  
15 you sit here today, you do not remember what those numbers are?

16 A I don't recall what the numbers are, what the  
17 final closure numbers.

18 MR. GEE: Okay. That's all I have.

19 THE COURT: If you have more than a minute, we're  
20 going to break.

21 MR. GALLAGHER: I'm done. I just wanted to give  
22 you the exhibit number for the slide deck that was presented.  
23 It is 1457.

24 THE COURT: All right. You have no further  
25 questions for this witness?

1 You are free to leave, sir. Thank you.

2                   We are going to take our morning break. It's now  
3 almost 10:40. We will break until 10:55.

10:39AM 5 case, the people, or the subject matter involved. Continue to  
6 keep an open mind. See you back here in 15 minutes.

9 THE COURT: We are in recess.

10:54AM 10 (The following proceedings were held in  
11 open court in the presence of the jury:)

12 THE COURT: We are back on the record in the  
13 trial matter. We are still in the defense case.

14 Mr. Blum, your next witness.

10:58AM 15 MR. BLUM: Yes, Your Honor. Whittaker will call  
16 Gary Hokkanen.

17 THE COURT: All right.

10:58AM 20 Do you solemnly swear that the testimony you  
21 shall give in the cause now before this Court shall be the  
22 truth, the whole truth, and nothing but the truth, so help you  
23 God?

24 THE WITNESS: Yes.

10:58AM 25 THE CLERK: Thank you. Please be seated.

1 MR. BLUM: Your Honor, the entirety of  
2 Mr. Hokkanen's slide deck is for demonstrative purposes only,  
3 and it will be Exhibit 1458.

4 THE COURT: Very well.

10:58AM 5 THE CLERK: Sir, for the record, would you please  
6 state your name and spell your last name.

7 THE WITNESS: Yes. Gary Hokkanen,  
8 H-o-k-k-a-n-e-n.

9 THE COURT: Mr. Blum.

10:58AM 10 GARY HOKKANEN,

11 CALLED BY THE DEFENDANT, WAS SWORN.

12 DIRECT EXAMINATION

13 | BY MR. BLUM:

14 Q Mr. Hokkanen, what is your profession?

10:59AM 15 A I am a principal hydrogeologist.

16 Q And what is hydrogeology?

17 A Hydrogeology generally is the study of the  
18 movement of groundwater, and I specialized in the contaminant  
19 transport, how chemicals move in groundwater, what affects  
20 them, how they move, that sort of thing.

21 Q Is that in your industry called fate and  
22 transport?

23 A Fate and transport of chemicals in groundwater,  
24 yes.

10:59AM 25 Q And what education do you have in that regard?

10:59AM

1 A Well, I started out with a Bachelor's degree in  
2 civil engineering. I specialized in environmental engineering  
3 at the University of Minnesota. I graduated in 1980. And I  
4 then have a Master's degree from the University of Waterloo,  
5 studied groundwater and contaminant transport, fate and  
6 transport of chemicals.

7 Q The University of Waterloo is in Canada?

8 A In Ontario, Canada, yes.

9 Q Why the University of Waterloo?

11:00AM

10 A Well, after my Bachelor's, I went to work for the  
11 U.S. Environmental Protection Agency in 1980, spring of '80.  
12 And for two years I worked on what's called the  
13 Superfund Program. What we did is try to identify contaminated  
14 sites and put them -- the worst ones on the national priority  
15 list. These are the worst contaminated sites in the country.  
16 I got very interested in this new field, got interested in the  
17 groundwater aspect. And Waterloo at the time and, quite  
18 frankly, still is sort of the premier groundwater and  
19 contaminant transport program in the world.

11:00AM

20 Q Are you familiar with somebody named John Cherry?

21 A John Cherry was on my advisory committee, yes.

22 Q Who is Mr. -- I guess it's Dr. Cherry. Who is  
23 he?

11:00AM

24 A Dr. Cherry is one of the most well-known  
25 hydrogeologists in the world. He's written a seminal book. He

1 led the program at Waterloo for a number of years. Very  
2 prominent hydrogeologist.

3 Q Did you study under him?

4 A I did, yes.

11:01AM 5 Q And when did you leave Waterloo?

6 A 1984.

7 Q What did you do then?

8 A Went into consulting. Worked for a number of  
9 different firms investigating and remediating contaminated  
11:01AM 10 sites, primarily focusing on groundwater although I did a  
11 number of soil investigations and remediations. The majority  
12 of these sites were chlorinated solvent sites, chemicals like  
13 TCE and PCE.

14 Q What kind of different sites did you work on?

11:01AM 15 VOC sites.

16 A Well, these -- these TCE and PCE are extremely  
17 widely used chemicals. They're great solvents. They're used  
18 in a wide variety of industries. They're used at gas stations.  
19 PCE is used or was used at dry cleaners all over the country.  
11:01AM 20 So quite a few businesses and industries used these chlorinated  
21 solvents, contaminated soil and groundwater, and then that's  
22 where I got involved.

23 Q And how many different VOC sites have you worked  
24 on?

11:02AM 25 A Well, I have been doing this about 40 years, and

1 it's somewhere over 100. I haven't really added up. Some I  
2 worked on for years and years. Others I advised on in short  
3 periods of time. Quite a few.

11:02AM

4 Q And at some point did you start testifying in  
5 courts?

6 A Yes, I did. It was 12, 14 years ago or so. I  
7 started this sort of this expert testimony, yes.

8 Q How many times have you testified in court?

11:02AM

9 A Well, I have been deposed over 20 times. In  
10 trials four or five times.

11 Q In each of those cases were -- did the Court  
12 declare you to be an expert in hydrogeology?

13 A Yes.

14 Q All right.

11:02AM

15 THE COURT: And, counsel, I'm going to strike the  
16 answer without a foundation. Courts typically don't make, at  
17 least not this Court, doesn't typically make that type of  
18 finding. I will strike the answer. If you want to establish a  
19 foundation, you can.

11:03AM

20 MR. BLUM: No. It's okay.

21 Q When did you start working in this case?

22 A Summer of 2019.

23 Q And what was your assignment at the time?

11:03AM

24 A My assignment was to start to review data,  
25 groundwater flow and water quality data that had been collected

1 at the Bermite site and offsite, trying to identify if  
2 contaminants, primarily VOCs, from the Bermite site had  
3 impacted production wells.

4 MR. BLUM: All right. If we can see Exhibit 158,  
11:03AM 5 please.

6 Q The production wells, do you see those wells,  
7 what you call production wells on this map?

8 A Yes. These are the ones with the yellow and red  
9 circles.

11:04AM 10 Q And is V-157 a production well you looked at?

11 A V-157 was shut down, I think abandoned, by the  
12 time I got involved.

13 Q Okay. So can you tell the jury which -- which  
14 wells you looked at in relation to production wells?

11:04AM 15 A I focused quite a bit on Saugus 1 and 2, these  
16 two wells here. V-201 and V-205, I have spent some time  
17 looking at the data from Q2 up here and then also to a certain  
18 extent these two wells, NC-11 and NC-13.

19 Q Did you also look at groundwater onsite data?

11:04AM 20 A Quite a bit of data, yes.

21 Q Now, how important is data to a hydrogeologist?

22 A Data is the primary thing we use to understand  
23 groundwater flow, contaminant transport, how chemicals move,  
24 where they move, how far they have moved. And we go to the  
11:05AM 25 trouble of installing and constructing groundwater monitoring

11:05AM

1 wells, collecting water levels to help tell us where  
2 groundwater is moving. And then we collect water samples, get  
3 them analyzed by an analytical lab to tell us where  
4 contaminants are, what concentrations they are, and also where  
5 contaminants aren't which is very important in understanding  
6 the size and breadth of these plumes, these areas of  
7 contamination that we're looking at.

8 Q And how much data in this case did you look at?

11:05AM

9 A There's a lot of data in this case. It's a large  
10 area. I have looked at data over 10 to 15 years from over  
11 200 monitoring wells in this area.

12 Q Okay. And even though you're employed here as an  
13 expert, do you consider yourself a scientist?

14 A Very much so.

11:06AM

15 Q Can you explain why that is true?

11:06AM

16 A Well, I try to solve complicated subsurface  
17 problems. I collect or have people collect for me data or look  
18 at data that's already been collected and try to understand  
19 what's going on in the subsurface, where groundwater is moving,  
20 where contaminants are, where they started, where they're  
21 going, how far they have gone, that sort of thing.

22 Q Okay. Mr. Hokkanen, as a scientist what role  
23 does humility play in what you do?

11:06AM

24 MR. RICHARD: Objection. I'm not sure I heard it  
25 correctly. But I will object as vague.

1 THE COURT: Sustained. Ask a different question.

2 Q BY MR. BLUM: As a scientist, do you have to be  
3 able to say "I don't know" in answer?

4           A        Well, I deal with the subsurface. I can't see  
5 it. I can't touch it which is, to me, quite interesting and  
6 challenging. I collect a lot of different data and draw  
7 conclusions from those data. I don't know everything going on  
8 in the subsurface. I collect data and then draw conclusions  
9 from that.

11:06AM

0 MR. BLUM: If we could put up to start Exhibit --  
1 I think it's 190.

12 Q Now, have you seen Exhibit 190, Mr. Hokkanen?

13 A Yes, I have.

14 Q And what is it?

11:07AM

15           A        This is a representation -- it contains a lot of  
16 information. It's a representation of data collected in the  
17 second quarter of 2019.

18 Q And is this just -- is this data from one source  
19 or from multiple sources?

11:07AM

20 A Well, it's data from a number of monitoring  
21 wells, both water level data and water quality data. It is  
22 collected basically over a few days, very short period of time.  
23 So it represents essentially a snapshot of time.

24 Q Okay. Now, do you see the green line?

11:08AM

25 A There's two of them, yes.

1 Q The one on top.

2 A Yes.

3 Q Do you know what that's supposed to represent?

4 A What the legend says, it represents perchlorate  
11:08AM 5 and TCE migration pathway.

6 Q Okay. And in your opinion, is that a pathway for  
7 the movement of VOCs?

8 A The data doesn't show that that's a pathway, no.

9 Q And what data are you relying upon?  
11:08AM 10 A Relying on water quality data and also  
11 groundwater water levels that we determine which way  
12 groundwater is flowing. And you can see that on this figure in  
13 the blue lines.

14 Q And what specifically are you talking about?

15 A The blue lines -- and here's a few of them  
16 here -- these represent equal elevations of water level in the  
17 ground. Groundwater flows perpendicular, essentially -- I like  
18 to say groundwater flows downhill. So groundwater essentially  
19 flows perpendicular to those blue lines.

20 11:09AM Q How does that affect your opinion as to whether  
21 the upper green line is accurate?

22 A Well, the upper green line seems to take a bit of  
23 a -- sort of a route not along the groundwater flow direction.  
24 And I'd like to point out that these two green lines -- we're  
11:09AM 25 missing a number of lines. Groundwater doesn't flow just along

1 two green lines. Groundwater is flowing along this whole area.  
2 So there are a number of lines where groundwater is flowing all  
3 through this area.

4 Q But all perpendicular to the blue lines; correct?

11:09AM 5 A And the blue lines, again, it's subsurface. It's  
6 like a hill at the surface. It's the topography of the water  
7 table essentially. So groundwater flows downhill basically.

8 Q And the blue lines, are they called contour  
9 lines?

11:10AM 10 A They are contouring the water level, yes.

11 Q Okay. Now, if we take a look at the -- again,  
12 the upper green line, is there any well data along that line  
13 that is inconsistent or consistent with that being a pathway  
14 for movement of VOCs?

11:10AM 15 A Yes, there is. There are two well nests.  
16 There's one right up in here somewhere. I don't have the exact  
17 location. And then there's a very important well nest right  
18 here.

19 And what a well nest is are multiple wells  
11:10AM 20 screened at different depths at basically the same location.  
21 And there -- this is representing, just to go back and look at  
22 the legend down here, this is representing one of the layers in  
23 this Saugus formation, representing Saugus 3A. There is a  
24 well, Saugus 3A well essentially right here, and there is a  
11:11AM 25 well, Saugus 3A well there.

11:11AM

1                   Now, I also want to point out that the wells here  
2 are 500 feet east of Saugus 1. Those wells were specifically  
3 put in to detect any contaminants moving toward Saugus 1 from  
4 the east. They're what we call sentry wells. They're  
5 essentially guarding sort of the east side of Saugus 1. The  
6 well that is screened in Saugus 3A has never detected TCE or  
7 PCE.

8                   Q         How about the one below that, the one that is I  
9 think at the 1030 contour?

11:11AM

10                  A         This one here has also not detected TCE or PCE.

11                  Q         In the 3A aquifer; correct?

12                  A         In 3A, yes.

13                  Q         Why is that significant?

11:12AM

14                  A         Well, if there was VOCs, TCE or PCE moving in  
15 this direction, you would see detections of TCE and/or PCE in  
16 those wells, and we don't.

17                  Q         Is that a general way that hydrogeologists look  
18 to find pathways?

11:12AM

19                  A         Yes. There are a couple of ways. The best way  
20 to do it is with water quality data. It's fairly simple. We  
21 start putting wells in and measuring water quality near where a  
22 release occurred. And then we start moving in a downgradient  
23 direction where the contaminants are moving. We keep putting  
24 wells in and measuring the water quality until we don't see it  
25 anymore. And where you start getting non-detects, that's

1 basically the edge of the problem.

2 Q So sort of like each well is just like bread  
3 crumbs if the TCE was there?

11:12AM 4 A If you keep seeing TCE, you're in the middle of  
5 an impacted area that we call a plume. When you start not  
6 seeing it anymore, then you're beyond that area.

7 Q Now, does this map which was figure 2 from  
8 Ms. Stanin, does it show a contour line for TCE?

11:13AM 9 A Yes, it does. The edge of the area that's been  
10 impacted by TCE is -- it's hard to see on the original figure.  
11 I'm drawing it. This is what's been drawn as the edge of the  
12 TCE area.

13 Q It's not going offsite, is it?

11:13AM 14 A It's moving in the northwest direction as  
15 perchlorate has towards Saugus 1 and 2, but this is the extent  
16 of -- it hasn't gone beyond that border, no.

17 Q In the entirety of the documents you have  
18 reviewed, have you seen any environmental professional draw a  
19 contour line for VOCs that would include Saugus 1 or Saugus 2?

11:13AM 20 A I have -- there are a lot of data. Data goes  
21 back about 15 years or so. And the TCE area of contamination,  
22 this plume, is generally what you see here on this figure.

23 Q Okay. All right. Let's move on.

24 Q So looking at all the data you did, did you form  
11:14AM 25 an opinion as to whether or not the site, the Whittaker-Bermite

1 site, is the source of any contamination in either Saugus 1,  
2 Saugus 2, V-201, or V-205?

3 A Yes, I have.

4 Q What is your opinion?

11:14AM 5 A As I testified to earlier, I have looked at data  
6 from over 200 wells over 10 to 15 years. I have looked at the  
7 water -- general groundwater direction. My conclusion was that  
8 VOCs, including TCE and PCE, have not migrated to the  
9 Saugus 1, 2, 201, 205.

11:14AM 10 Q All righty. Let's take a look at -- all right.

11 Now, the first -- the second slide, what is it?

12 A This is a figure from, I believe, Ms. Stanin's  
13 expert report.

14 Q Okay. And what do you understand it to be?

11:15AM 15 A She was representing plausible pathways for VOC  
16 migration from the Bermite site.

17 Q All right. Now, I want to focus on this pathway,  
18 on the one where -- do you see the one where the red dotted  
19 line is?

11:15AM 20 A Yes.

21 Q And look at the one right above it.

22 A Yes.

23 Q Okay. Now, that's drawn very narrowly; correct?  
24 Not much width to it; correct?

11:15AM 25 A Very narrow, yes.

1 Q Do pathways -- is that how pathways really react  
2 in the subsurface?

3 A I have investigated and studied plumes for  
4 decades now, and no. The answer is no. The movement of  
11:15AM 5 chemicals in groundwater don't move along a narrow line.  
6 They -- they tend to widen actually from the release point. So  
7 you have a release. As they continue to migrate downgradient  
8 dissolved in the groundwater, these areas of contamination --  
9 these plumes tend to widen with time.

11:16AM 10 Q And what's dispersion?

11 A Dispersion is actually related to your last  
12 question. It's essentially the lateral migration of  
13 contaminants as the dissolved chemicals move in and around --  
14 with the groundwater in and around the soil particles.

11:16AM 15 Groundwater doesn't move in a straight line. The groundwater  
16 exists within sands, gravels, clays, that sort of thing. So  
17 the water has to move in and around all these particles, and  
18 the chemicals do the same thing.

19 Q Let's talk about aquifers. Is aquifer like a  
11:17AM 20 river you would see above ground?

21 A No. The water exists between -- in the pore  
22 spaces, the empty spaces between all the soil particles.

23 Q Okay. And I want to show you the -- take a look  
24 at what's going on in -- this is an example of dispersion?

11:17AM 25 A Yes. As you can see, the yellow lines represent

1 the pathways that groundwater will take as it has to go in and  
2 around the soil particles. Dissolved chemicals follow along  
3 with the groundwater.

4 So as you can see here, some of these -- some of  
11:17AM 5 these wiggly lines, what we call tortuous pathways, move  
6 laterally. They move -- move to the side of the general  
7 groundwater flow direction. As you can see with distance, the  
8 contaminants move to the side, so the plume gets wider.

9 Q In other words, it sort of expands out like an  
11:17AM 10 upside-down pyramid?

11 A Something like that, yes.

12 Q And is that what you generally see in the  
13 subsurface?

14 A We do. As a matter of fact, dispersion was a key  
11:18AM 15 subject of my Master's thesis back at Waterloo. It's a  
16 well-established principle. And yes, we see it in the plumes  
17 that we investigate.

18 MR. BLUM: Now, if we can quickly put up 190  
19 again. Actually, yes. Put up 190, please.

11:18AM 20 Q Now, the plume map which is Exhibit 190, is it  
21 from a specific time frame?

22 A Yes. It's from the second quarter of 2019.

23 Q Right. And you said I think it's based on two to  
24 three days of monitoring?

11:18AM 25 A There's quite a few wells. You can't sample them

1 all in one day, so it takes several days to sample all the  
2 wells, yes.

3 Q And is the pink -- I guess it's pink. Is that  
4 called a plume?

11:18AM 5 A Yeah. It's the area that -- in this case,  
6 perchlorate has been detected in wells, and that area we call  
7 plume.

8 Q And is this the only -- was May, June 2019 the  
9 only plume map that was created?

11:19AM 10 A No. There's been a number of them in years prior  
11 to 2019, and they don't look like this.

12 Q Pathways change over time?

13 A Pathways change, yes. And this particular  
14 figure -- I should have mentioned this earlier. What we do  
15 when we draw these pink lines is we -- we're true to the data.  
16 So we draw the lines based on the data we collect during that  
17 period of time. That particular drawing was drawn because one  
18 of the wells on the border, the western border of OU-4, was a  
19 non-detect. It has never been non-detect before.

11:19AM 20 Q Non-detect for perchlorate?

21 A For perchlorate, yes.

22 Q Now, Mr. Hokkanen, as the plume direction  
23 changes, what impact does that have on where contaminants go?

24 A Yes. Well, where the groundwater flow direction  
25 changes with time and based on water levels that, again, have

1       been collected over 15 years or so, the groundwater does change  
2       a bit depending on the time of the year, rainfall events, rainy  
3       season in this area. So sometimes it's moving straight,  
4       straight northwest, sometimes a little bit more north,  
11:20AM 5       sometimes a little more west.

6                   And what happens, because the groundwater flow  
7       direction changes, the contaminants follow because they're  
8       dissolved in the groundwater. It tends to smear the plume and,  
9       again, make it wider as it travels downgradient as that  
11:20AM 10      direction changes.

11                   MR. BLUM: Okay. And if we can look at the  
12      demonstrative.

13                Q        So flow direction, if it starts out straight, it  
14       can go to the left; correct?

11:20AM 15           A        Yes. And as you can see, now you have  
16       contaminants moving more to the northwest up there. And so as  
17       the groundwater direction changes, the dissolved chemicals  
18       follow.

19                Q        And then if we move to the right?

11:21AM 20           A        Same thing.

21                Q        And back to the left and back to the right. And  
22       at the end, what do you have?

23                A        Again, you get a wider plume. So between  
24       dispersion and the changing groundwater flow direction, plumes  
11:21AM 25       tend to widen as they move in a downgradient direction.

1 MR. BLUM: All right. If we can go back, please,  
2 to Exhibit 190.

3 Q Okay. So if we go back to the second  
4 demonstrative, and I want you to focus on this area right  
5 there. You see where the line -- the blue line drawn by  
6 Ms. Stanin is above the red checkered line?

7 A Yes.

8 Q And it's right next to a well; correct?

9 A Yes. There's a series of wells at that point.

11:22AM 10 Q If -- do you have an opinion as to whether or  
11 not, if that pathway is correct, whether flows along that  
12 pathway would have impacted the well it circled?

13                   A            Well, as I testified to earlier, contaminants  
14                   don't move along a narrow line like that. Particularly, given  
15                   the distance from the site, you would have a relatively wide  
16                   plume at that point. And if that is, indeed, a flow path of  
17                   contaminants, you would see it in that well nest.

18 Q And that well nest consistently has detections of  
19 perchlorate in it; correct?

11:22AM 20 A Yes.

21 Q And how about VOCs?

22 A Rarely.

23 Q And if we take a look at the well above it, same  
24 thing? Almost always perchlorate, rarely VOCs?

11:23AM 25 A Yes.

1 Q And the well above that?

2 A You see perchlorate in that well a little bit  
3 less than the one below it, but you do see perchlorate in that  
4 well. And again, almost never the VOCs.

11:23AM 5 Q What does that lead you to believe?

6 A That perchlorate is moving through that area and  
7 the VOCs aren't.

8 Q And if we -- and I want you to look at this  
9 pathway, the arrow right there. What does that tell you?

11:23AM 10 A Well, that blue arrow shows that, again, that's  
11 based on the groundwater flow map that we looked at earlier.  
12 That groundwater and the dissolved chemicals in it would move  
13 through that area.

14 Q All right. Now, these red dots right there,  
15 those are VOC detections; correct?

16 A Yes.

17 Q Based on the pathways drawn by Ms. Stanin, if  
18 VOCs are exiting the Whittaker site and moving toward Saugus 1  
19 and Saugus 2, what would you expect to see in the border --  
11:24AM 20 those three border wells we talked about?

21 A Well, the red wells consistently show detections  
22 of TCE. And because they consistently show detections, they're  
23 within the plume. What we should see in the wells that are  
24 shown as green on the western border of the property, we should  
11:24AM 25 consistently see the same thing. We should see TCE

1 consistently in those wells.

2 Q And we don't.

3 A And we don't.

4 Q What does that mean?

11:24AM 5 A There's not a plume moving through that area.

6 Q All righty. Let's look at some plume maps.

7 Before we move there, quickly, can you just  
8 explain the difference between 3A and 3C?

9 A Yes. There are different layers in this in  
11:25AM 10 what's called the Saugus formation. There's distinct layers  
11 where groundwater flows, and they're actually separated by  
12 layers that groundwater moves very slowly through. We call  
13 those aqua codes or aquitards.

14 So Saugus 3 in this case, which is where most of  
11:25AM 15 the contamination we see under the Bermite site, Saugus 3 is  
16 split up into three different layers -- Saugus 3A, Saugus 3B,  
17 and Saugus 3C.

18 Q Is Saugus 3A important here?

19 A Saugus 3A, we see the highest concentrations of  
11:25AM 20 VOCs in Saugus 3A under the Bermite site, yes.

21 Q All righty. And which are -- in your mind, which  
22 are the most important of the different layers for our  
23 purposes?

24 A Again, Saugus 3A has the highest concentrations.  
11:26AM 25 It tends to have the faster groundwater flow in general.

1 Saugus 3C is also impacted, generally not as much as Saugus 3A.  
2 They're both important. But the highest concentrations we see  
3 in Saugus 3A.

4 Q Let's move on.

11:26AM 5 This we saw before, but this doesn't have the  
6 green lines; correct?

7 A The dotted green lines?

8 Q The green lines that show pathways put in by  
9 Ms. Stanin.

11:26AM 10 A No, it does not. Sorry.

11 Q All right. And this is what the plume looked  
12 like between -- in May of 2019?

13 A Based on the data collected that month, yes.

14 Q Specifically 3A; correct?

11:27AM 15 A This is the 3A map, yes.

16 Q Okay. Now, you said that the plume -- one of the  
17 significant parts of drawing the plume was the absence of  
18 perchlorate in that well; correct?

19 A Yes.

11:27AM 20 Q How would that affect how the plume was drawn?

21 A Well, the outer contour line, I believe this  
22 outer pink area, goes down to 6, and so you can include the  
23 non-detect. So they went around it like this. So that's why  
24 you get this shape up here like this. This well right here.

11:27AM 25 Q Now, are these maps sort of a snapshot in time?

1 A Yes. As I testified to earlier, this is data  
2 collected over a few days.

3 Q All right. Now, this is in 2019. Let's look at  
4 3A for perchlorate. When was -- when is this map?

11:28AM 5 A This is -- again, they're all second quarter.  
6 They drew these plume maps just in data from the second quarter  
7 of each year. So this is from 2014. And here you see the  
8 outer edge as it's drawn here of the perchlorate as I have  
9 drawn.

11:28AM 10 Q No finger; right?

11 A No finger, no. And primarily because all of  
12 these wells over here show perchlorate. Saugus 2 and Saugus 1  
13 also show perchlorate. So the perchlorate plume as it's been  
14 drawn over the years basically looks like this or something  
15 similar to this.

16 Q All right. Let's take a -- this is 2015. I want  
17 to go through these quick.

18 A Yes.

19 Q Can you just draw for the jury the perchlorate  
11:28AM 20 plume?

21 A Again, the outer edge is drawn on this map as  
22 something like this.

23 Q All right. Let's go to the next one. This is  
24 2016.

11:29AM 25 A Now, here they have drawn the line like this.

1 There is an outer line that's out here like this.

2 Q All right.

3 THE COURT: What does that mean that there's an  
4 outer line?

11:29AM 5 THE WITNESS: If you look at this outer line,  
6 there's question marks. So sometimes we will draw the plume  
7 lines that aren't -- we're not sure of. So we will draw the  
8 line based on some data, but we will put question marks because  
9 we're not quite sure.

11:29AM 10 Q BY MR. BLUM: This is sort of recognizing what  
11 you don't know?

12 A Yes.

13 Q All right. And then we have -- this is for 2017.

14 A And, again, this is -- the basic outer edge of  
15 the perchlorate plume is drawn on this figure.

16 Q All right. And last I think -- last one or  
17 second to the last, this is 2018?

18 A This one goes out here and beyond the figure.

19 Q Which would include the three wells; correct?  
11:30AM 20 The border wells we talked about?

21 A The three locations. Again, there's 16 wells in  
22 those three locations.

23 Q So when I say three wells, I was wrong.

24 A Yes. There's 16 wells along that border.  
11:30AM 25 Q Okay. There's three well clusters; correct?

1 A Correct.

2 Q Each well cluster has what? Three or four  
3 different wells?

4 A One of them has 3, one of them has 2, and the  
11:30AM 5 other has 11.

6 Q Which one has 11?

7 A This is the one at the southern corner down here.

8 Q And the last -- is it the last? Okay. This  
9 is -- yeah. This is 2019. This is the one where -- that

11:31AM 10 Ms. Stanin showed us; correct?

11 A Yes.

12 Q So is -- does the 2019 contour represent what the  
13 contours were for the preceding years?

14 A No. And, again, it's just based on this one  
11:31AM 15 non-detect.

16 Q So we couldn't look at the 2019 contour as  
17 representative of what's been going on at the site for -- at  
18 least since 2014; correct?

19 A Yes. That's what we just saw.

11:31AM 20 Q So as a hydrogeologist, how do you integrate all  
21 this data?

22 A Well, with a lot of data, you have to integrate  
23 it all. You can't ignore data. You can't say, well, that  
24 doesn't fit my hypothesis. We look at all of the data and draw  
11:31AM 25 conclusions based on all of the data.

1 Q       Would it be from a scientific point of view, in  
2 your opinion, would it be proper just to look at, for instance,  
3 the contour maps for 2019 and say that this is the way it's  
4 always been?

11:32AM 5 A       No. That's not how I was taught. I have never  
6 practiced that way.

7 Q       And why is that wrong?

8 A       Well, again, if we were applying data and science  
9 to draw conclusions, you use all the data that's available to  
11:32AM 10 you, and then you use good science to try to draw conclusions  
11 about what that data means.

12 Q       Now, if we take a look at 3C -- and I just want  
13 to go through them quick. This is for 2014, '15, '16, '17,  
14 '18, and '19; right?

11:33AM 15 A       Yes.

16 Q       Do all of them include the three well clusters at  
17 the western boundary of OU-4?

18 A       Yes.

19 Q       All right. Now, this is -- this is for May 2019;  
11:33AM 20 correct?

21 A       Yes.

22 Q       And that's the same -- that is the same period  
23 that -- the one that we looked at that Ms. Stanin used;  
24 correct?

11:33AM 25 A       Same period, yes.

1 Q Why is this different? Isn't it the same  
2 aquifer?

3 A Well, this is aquifer layer Saugus 3C. The one  
4 we looked at before was 3A.

11:33AM 5 Q All right. Now, on this one, can you show the  
6 outward contours of the perchlorate plume?

7 A The outer one is shown like this. It goes,  
8 again, beyond the screen.

9 Q Is it unusual for different layers to have  
11:33AM 10 different contours?

11 A No. Not at all. Groundwater flow within these  
12 two layers, 3A and 3C, are a bit different. So the chemicals  
13 are moving differently in these two layers.

14 Q So what we have to -- do we have -- to know  
11:34AM 15 what's going on, do we have to look at basically the saturated  
16 zone or the water-bearing zones within a three-dimensional  
17 aspect?

18 A Yes. That's why all these figures are separated  
19 by whatever layer it represents. In this case we have been  
11:34AM 20 looking at 3A and 3C, yes.

21 THE COURT: Is it just saturation that accounts  
22 for differences, or are there other factors such as  
23 permeability?

24 THE WITNESS: Permeability is one. If there's  
11:34AM 25 pumping wells, as there are in this area, sometimes there's

1 more pumping and more effluence in the different layers. So  
2 that could also change the flow direction, yes.

3 THE COURT: Are those the three principal factors  
4 that you would take into account?

11:34AM 5 THE WITNESS: Also, there's some movement between  
6 the layers, between these aqua codes or aquitards. That's also  
7 a factor. So there's a number of factors that account for the  
8 differences.

9 Q BY MR. BLUM: Now, in determining sources of  
11:35AM 10 whether or not, for instance, Saugus 2 has been contaminated by  
11 VOCs from the site, is this three-dimensional aspect important?

12 A Very much so, yes.

13 Q Why?

14 A Well, the wells are drawing from a lot of  
11:35AM 15 different layers. And so knowing where the contaminants are  
16 helps to tell you, you know, what the wells are drawing from,  
17 what layers they're drawing from and what effluence there is.

18 Q So when you're matching things up, not only do  
19 you have to match, for instance, it's within the flow path, you  
11:35AM 20 would have to match up what would be I guess the horizontal  
21 aspect, you also have to match up the lateral aspect also.

22 A The vertical, yes.

23 Q I'm sorry. Vertical.

24 Is that what you did?

11:35AM 25 A Yes.

1 Q And as it relates to whether or not the site is  
2 the source at Saugus 1 or Saugus 2, when you were matching  
3 these things up, what was your conclusion?

11:36AM 4 A Well, again, I looked at all of the data. I  
5 looked at the data in all of the different layers. Based on my  
6 review and analysis of all of that data, that was the  
7 conclusion I came to.

8 Q How about for V-201 and V-205?

11:36AM 9 A My conclusion was the same as Saugus 1 and 2,  
10 that the Bermite site was not the source, that there were some  
11 other unknown sources. I don't know what they are, but my  
12 conclusion was is it wasn't the Bermite site.

13 Q Okay. Let's move on to VOC plumes. Sorry. TCE  
14 plumes.

11:36AM 15 Now, what is the -- which I think is -- what's  
16 slide 22? What's that of in front of you?

17 A This is showing, again, the second quarter, and  
18 this time 2014. This is representing the plume area, the  
19 contaminated area for TCE and Saugus 3A.

11:37AM 20 Q And can you draw where that is?

21 A The outer edge, something like that. I missed  
22 the line a little bit, but it's something like that.

23 Q All righty. If we go to the next year.

24 A Very similar.

11:37AM 25 Q All right. Let's go to the next year.

1           A       Again, it doesn't appear that this plume is  
2 moving that fast.

3           Q       And this is the next year.

4           A       2017. Very, very similar.

11:37AM 5           Q       Okay. And 2018.

6           A       2018 is a bit different. Within this area it's  
7 very similar. However, there was a detection down here in one  
8 of these wells. I think it was 5 parts per billion. So the  
9 line got drawn -- for that particular second quarter of 2018,

11:38AM 10          it got drawn down in that area.

11          Q       And was that -- was that consistent before and  
12 after of VOCs in that well?

13          A       No. I have looked at the data in that well and  
14 other wells in that area, and TCE has been detected once or  
11:38AM 15 twice in those wells over the years.

16          Q       How many different samples have been taken from  
17 those wells?

18          A       Anywhere from 30 to 60 times those wells have  
19 been sampled, and TCE has been detected a couple times.

11:38AM 20          Q       What is the significance of that?

21          A       Similar to what I talked about before along the  
22 well nest along the western border of OU-4, if TCE were moving  
23 through that area, if the plume was in that area, you would  
24 consistently see TCE detections.

11:39AM 25          Q       Well, what's the source of the TCE that was found

1 there?

2 A It's a bit of an unknown. It could be a local  
3 spill of some kind in these areas. It could be  
4 cross-contamination from sampling, the equipment we use to  
11:39AM 5 sample wells. I'm not quite sure.

6 Q Now, 5 parts per billion, is there any way that  
7 we could describe that so we can understand how large or small  
8 that is?

9 A Yeah. It's hard to get a perspective on parts  
11:39AM 10 per billion. It's basically one molecule of -- 5 molecules of  
11 TCE to a billion molecules of water. It's something along the  
12 lines of a drop of TCE in an olympic-sized pool. I have heard  
13 that used before. It's very small.

14 Q So, for instance, if you had 1 million red  
11:40AM 15 marbles -- if you had -- 5 of those marbles would be PCE.

16 A In 5 billion, yes.

17 Q Yes. Okay. Let's go now to the next year.  
18 All righty. This is 2000 --

19 A 2019.

11:40AM 20 Q And again?

21 A Very similar to what we have seen in other years.  
22 And you can see down here, again, these are non-detects.

23 Q All right. Now, if we look at 3C, we find the  
24 plumes a little different; right?

11:40AM 25 A Yes. This is, again, the layer below 3A. We see

1 a very small area that is impacted with TCE.

2 Q And I'm just going to go through them. Okay.

3 So that's, again, 20 --

4 A '15.

11:41AM 5 Q '16, '17, '18, '19; right?

6 A All very similar, yes.

7 Q All right. Now, what is the 35th slide here?

8 Can you explain it to us?

9 A This is another figure from Ms. Stanin's expert  
11:41AM 10 report, and this is from May of 2019, and it shows -- one, it  
11 shows the blue contour lines that we have discussed before.  
12 And you can see the arrow here in this area. Groundwater is  
13 flowing to the southwest. And it also shows the -- this area  
14 of TCE impact, and then there's a small area up here that TCE  
11:41AM 15 has also been detected in monitoring wells.

16 Q Is -- if we refer to what's up here as "A" and at  
17 the right-hand corner as "B," are these two connected?

18 A No. And there's a very fundamental reason. TCE  
19 and PCE have an interesting characteristic. As they migrate  
11:42AM 20 through the ground in groundwater, some of the chemical sticks  
21 to the aquifer material. So some of it continues to migrate  
22 with the groundwater. Some of it sticks to the aquifer  
23 material. So it basically leaves a trace. It leaves a path.  
24 So having two distinct areas like this, we don't see that in  
11:42AM 25 TCE plumes. What this tells me is that there's some separate

1 source up here for "A."

2 Q And did you read the report of Dr. Trudell?

3 A Yes.

4 Q Did you consider it?

11:42AM 5 A Yes.

6 Q What did Dr. Trudell say in his report about  
7 whether these two plumes are connected?

8 A I think he basically said the same thing.

9 Q He agreed with you?

11:43AM 10 A Yes.

11 Q Okay. Now, have you heard of a term called  
12 "preferential adherence"?

13 A Yes.

14 Q What does preferential adherence mean?

11:43AM 15 A Well, adherence is -- again, there are different  
16 words that we use. It's absorption. It's basically these  
17 chemicals sticking to soil particles. So they preferentially  
18 stick to the soil particles.

19 Q So what it means is, given the choice between  
11:43AM 20 going with water or sticking with soil, VOCs choose soil?

21 A Well, they choose both. Basically there's an  
22 equilibrium between the soil and the soil particles. So some  
23 stays in the water, and some sticks to the soil.

24 Q All right. And because of that, you would expect  
11:43AM 25 to see evidence supporting the movement from B to A; correct?

1 A Yes. And let me just briefly further explain.  
2 Since some of the TCE, for example, sticks to the soil, if you  
3 then lower the concentration -- there's an equilibrium as I  
4 just testified to. If you lower the concentration in the  
11:44AM 5 water, then some of the chemical moves off of the soil back  
6 into the water to try to re-establish that equilibrium. So you  
7 will see detections of TCE in the water where TCE has migrated  
8 through and some of it has absorbed to the soil.

9 Q So if you have TCE and water that's flowing past  
11:44AM 10 particles that have TCE on it, if the TCE in the water gets too  
11 low, the soil particles can say, oh, good. I'm going to now  
12 move to the water.

13 A Yeah. So, for example, if you had clean water  
14 move through an area with TCE absorbed to the soil particles,  
11:44AM 15 some of that TCE would come back off and redissolve into the  
16 water.

17 Q And you don't see that?

18 A Don't see that here.

19 Q All right. Now, I want to move on and talk  
11:45AM 20 about -- by the way, what's the source of A?

21 A I'm not sure. I'm not sure what the source is.

22 Q As a scientist, what do you do? You have a  
23 source that you -- or some contamination, and because you don't  
24 know the source, you just assume it comes from Whittaker?

11:45AM 25 A Well, what we typically do is we try to go and

1 find the source. We look at potential sources. People, for  
2 example, that have used TCE, we collect samples and see if,  
3 indeed, they have released TCE, and they may be the source.

11:45AM 4 Q And have you had situations where, no matter how  
5 hard you look, you can't find it?

6 A Sometimes it's very hard to find, yes.

7 Q So if you've done all that and you can't find it,  
8 is it proper just to say, well, the only source I know is  
9 Whittaker; therefore, it has to be Whittaker?

11:46AM 10 MR. RICHARD: Objection. Argumentative.

11 THE COURT: Sustained.

12 Q BY MR. BLUM: Just because you don't know the  
13 source, can you conclude it's Whittaker?

14 MR. RICHARD: Objection.

11:46AM 15 THE COURT: Sustained.

16 Q BY MR. BLUM: Is there any basis that you know of  
17 to conclude that the source of the VOCs in area A is Whittaker?

18 A Again, I did a long thorough analysis of the  
19 data, and my conclusion was, no, it's not the source.

11:46AM 20 Q All righty. Now, V-201 and 205, these are two of  
21 the wells that you looked into as to who was the -- whether  
22 Whittaker -- or the site is the source; correct?

23 A Yes.

24 Q How close are they to A?

11:46AM 25 A They're relatively close. A is based on some

1 monitoring wells that have been constructed in that area.

2 Q And are these wells called the mall wells or  
3 DW wells?

4 A There's the library wells. There's the mall  
11:46AM 5 wells, DW wells. There's a number of them in that area, yes.

6 Q By the way, how high do we find the  
7 concentrations of TCE in the A area?

8 A I think the highest that we have seen is about  
9 15 parts per billion.

11:47AM 10 Q Okay. Let's go to the next one in order.

11 Now, what is -- what do we find in the next  
12 slide, slide 36?

13 A This is a representation of some computer  
14 modeling that was done looking at what we call the capture zone  
11:47AM 15 for -- I believe this is 205. It's really small on my screen.

16 Q Let's see if we can blow it up.

17 A This was looking at where water at 205 pumps  
18 where -- where the water comes from that comes out of the well.

19 Q Okay.

11:48AM 20 A It says 201 on the side. It's so small I can't  
21 see it.

22 Q Now, if it's a capture zone for 201, what does  
23 that mean?

24 A What a capture zone means is, when we pump a  
11:48AM 25 well, the water has to come from somewhere. So what a capture

1 zone is is where the well is essentially capturing water from  
2 in the subsurface.

3 Q So would -- like if we analogize it to a vacuum  
4 cleaner, it would be the area that the vacuum cleaner is  
11:48AM 5 sucking into the machine; correct?

6 A Same thing, yes.

7 Q When you look at capture zones, do you look at  
8 them over a certain period of time?

9 A That's one way to do it, yes.

11:48AM 10 Q And how long has V-201 been pumping?

11 A I think it pumped for 10 or more years, and then  
12 it hasn't been pumping for a while.

13 Q Okay. And if we blow this up, the line that I'm  
14 going to draw, is that -- what does the "2" mean there?

11:49AM 15 A What they were representing here is, as 201 is  
16 pumping, within two years, where does the water come from that  
17 goes to that well? So within that oblong shape, that's where  
18 the water came from within two years based on this model.

19 Q And here where it says "mall well," is that in  
11:49AM 20 area A?

21 A Yes.

22 Q So what would be the effect of V-01 {sic} pumping  
23 for ten years in relation to the contamination in A?

24 A Well, within two years, water that's at mall well  
11:49AM 25 and that area would go to and enter V-201.

1 Q What does that mean enter -- if VOCs are in that  
2 area, does that mean VOCs will be found in 201?

3 A You could then detect VOCs in 201, yes.

4 Q All right. Let's move on.

11:50AM 5 What is the next slide which is No. 37?

6 A This is another figure from Ms. Stanin's expert  
7 report, and this shows, I believe, some modeling that's been  
8 done to represent flow lines where groundwater is flowing while  
9 some of these production wells are pumping.

11:50AM 10 Q And what does it tell you about where Saugus 2 is  
11 drawing from?

12 A Well, it specifically shows that part of the  
13 water that Saugus 2 is drawing from comes from the area that  
14 you have just drawn the red circle.

11:51AM 15 Q And, generally, again, it deals with the three  
16 well clusters on the western edge of OU-4; correct?

17 A Yes.

18 Q All right. Now I want to move and talk about  
19 those clusters. For a lack of better word, I'm going to refer  
11:51AM 20 to them as the border wells.

21 Is that okay?

22 A Yes.

23 Q Now, what is the next exhibit?

24 A This shows concentrations of perchlorate and PCE  
11:51AM 25 and TCE in wells -- I believe this is unit Saugus 1.

1 Q And just to be clear, I want to -- the next bunch  
2 of questions is just going to focus on what the border wells  
3 are. Okay?

4 A Yes.

11:52AM 5 Q This is, again -- these are the three border  
6 wells; correct?

7 A These are the three locations, yes.

8 Q Clusters. All righty.

9 In your opinion, does the -- if we looked at the  
11:52AM 10 lateral extent of these pathways, would these flow through the  
11 border wells?

12 A That was the conclusion I came to, yes.

13 Q All right. What is the next exhibit in order?  
14 I'm not sure -- the next slide in order.

11:52AM 15 A This is another figure from Ms. Stanin. I don't  
16 know if this is her expert report or rebuttal report. One of  
17 the two.

18 Q Okay. Now, did you take a further in-depth look  
19 in terms of the prevalence of TCE and RMW-8, PZ-09, and MP-01?

11:52AM 20 A Yes. I looked at all of the data available over  
21 the years for those three locations, yes.

22 Q And in terms of the occurrence of TCE, was it --  
23 let me back up.

24 Within those -- that year, those periods, how  
11:53AM 25 many different testing periods was that?

1 A It varies by these different well clusters, but  
2 it's anywhere from 30 to 50 times these wells have been  
3 sampled.

11:53AM 4 Q Okay. And if we take a look at it, in 2004  
5 dealing with all of the wells, what was the occurrence of VOCs  
6 during the entire year?

7 A We see one detection down in Saugus 5. This .41,  
8 this is actually below the detection limit of .5. So it's very  
9 low.

11:53AM 10 Q Zero in Saugus 3; correct?

11 A Yes.

12 Q And when is the next time we find a detection?

13 A Well, we have to jump all the way up to 2013,  
14 nine years, and we finally see TCE show up again.

11:54AM 15 Q And where do we find it?

16 A We find it in -- it shows up in PZ-9, and again,  
17 I think in the MP-1 well.

18 Q All right. When is the next time we see any TCE?

19 A 2015 we see it once at 1 part per billion in  
11:54AM 20 Saugus 3A. None of the other wells showed TCE.

21 Q All right. And then how about 2019?

22 A See it twice. We see it in Saugus 1 which is  
23 above Saugus 3A and then down in Saugus 3C again.

24 Q 25 What can you conclude by basically going over  
11:55AM the -- when we find it or the prevalence of TCE in these three

1 border wells or well clusters?

2 A Yeah. And I think I have discussed this before.

3 If a TCE plume -- if the area of contamination coming from the

4 Bermite site was moving toward Saugus 1 and 2, we would see

11:55AM 5 consistent detections primarily in Saugus 3A and 3C. And we  
6 don't. It's -- we see a few detections.

7 Q Is this a close call in your mind?

8 A No. Not even close, no.

9 Q All right. I just want to -- you talked about  
11:55AM 10 data, and I wanted to show the jury some of the data we looked  
11 at. This is for RMW-08. That's the well at the top; correct?

12 A On the north side, yes.

13 Q All right. And what do we see here?

14 A One detection in 2013.

11:55AM 15 Q What's the -- I mean, this is the data you relied  
16 upon; correct?

17 A Yes. Every other sampling event TCE wasn't  
18 detected.

19 Q All righty. Here are the samples. Again.

11:56AM 20 Again. Again. That's the only TCE that was found in that  
21 well; correct?

22 A Pretty rare.

23 Q Given all those samples; correct?

24 A Yes.

11:56AM 25 Q All right. Now, what is 1,1-DCE?

11:56AM

1 A 1,1-DCE, the full name is dichloroethylene which  
2 means there's two chlorines on the molecule. It is essentially  
3 a breakdown product primarily of TCA. It can be a breakdown  
4 product of TCE. But more regularly we see it as a breakdown  
5 product of TCA which is tetrachloroethane.

6 Q All right. And we find some of it at the site;  
7 correct?

11:57AM

8 A We find that chemical TCA up in the northern  
9 alluvium area up here. We really don't see it on the main part  
10 of the site.

11 Q Is there any evidence that TCE has migrated from  
12 the site to any of the production of the four wells we are  
13 dealing with?

11:57AM

14 A Well, as you can see on this figure, the white  
15 dots are basically non-detects. So you do see some TCE down in  
16 this area here. All the white dots show that it's -- it's on  
17 the east side of the site and not on the west side toward  
18 Saugus 1 and 2.

19 Q Do we find DCE in Saugus 1 or 2?

11:57AM

20 A We do. We find DCE, low concentrations, but it's  
21 detected in those two production wells, yes.

22 Q Is the Bermite-Whittaker site the source of that  
23 DCE?

24 A Based on the data, no.

11:57AM

25 Q What is the source?

1 A Again, I'm not sure. I don't know what the  
2 source is.

3 Q So what does that tell you in terms of possible  
4 sources of DCE?

11:58AM 5 A Well, what this data, as we went over, is telling  
6 me, that the Bermite site isn't the source. There is another  
7 source or sources out there. And again, TCA, TCE, PCE were  
8 commonly used. Where it came from, I'm not sure.

9 Q Based on your professional experience, is it  
11:58AM 10 common to find sites that use TCA that also use TCE?

11 A I have seen that, yes.

12 Q Could you exclude the fact that the TCE found in  
13 the Saugus wells is from the same location that has caused the  
14 DCE contamination?

11:58AM 15 A I can't exclude it. Again, I'm not sure where  
16 the source is coming from.

17 Q All right. Let's talk about chloroform. What's  
18 chloroform?

19 A Chloroform is a chemical used in various  
11:59AM 20 industries for different purposes than the solvents we have  
21 been talking about. And it's -- we run into it from time to  
22 time in the subsurface. It's not as common as these VOCs are,  
23 but we do see it from time to time.

24 Q Is the site the source -- let me back up.

11:59AM 25 Was chloroform found in the Saugus 1 or Saugus 2

1 wells?

2 A Yes. I believe it has been, yes.

3 Q How about V-201 or 205?

11:59AM 4 A I'm thinking about the data. I don't know if  
5 it's been seen in those two wells. I know Saugus 1 and 2 it's  
6 definitely been detected.

7 Q Is the site the source of the chloroform in  
8 Saugus 1 or 2 wells?

9 A Well, I have, again, looked at chloroform data  
11:59AM 10 for the Bermite site. And, no, the data doesn't show it's a  
11 source. And this figure tends to show that. Again, the white  
12 dots representing chloroform in monitoring wells on the west  
13 side of the Bermite site are non-detect. There is some  
14 chloroform detections, but not near the Saugus production  
12:00PM 15 wells.

16 Q And the western area, that's the circle I just  
17 drew; correct?

18 A Yes.

19 Q If chloroform was coming from the Bermite site to  
12:00PM 20 the Saugus wells, would you expect to see concentrations in the  
21 area that I just circled?

22 A Yes.

23 Q What is the source of the chloroform found in the  
24 Saugus wells?

12:00PM 25 A Well, it looks like it might be coming from this

1 area here. We see perchlorate in alluvium wells in that area.

2 Excuse me. Chloroform. Not perchlorate. Chloroform.

3 Q Is that area called SIC?

4 A There is a facility there that is actually

12:01PM 5 outlined in red. That is the -- what we call the SIC site,  
6 yes.

7 Q All right. We're going to get to that in a  
8 moment, but I want to talk about this.

9 Have you looked at the distance that it is at the  
12:01PM 10 Whittaker site, Whittaker-Bermite site from the surface down to  
11 the groundwater?

12 A Yes, I have.

13 Q Does it vary?

14 A It varies a lot, yes.

12:01PM 15 Q For instance, in OU-1B, is it up to 700 feet?

16 A It actually -- the water table is 700 feet in  
17 that location, yes.

18 Q How about OU-3?

19 A It's not as deep. It's 300 feet. It varies a  
12:01PM 20 bit. 2- to 400 feet or so, but it's several hundred feet.

21 Q Have you looked at the opinions of Dr. Trudell  
22 and Ms. Stanin as to travel times that it would take to go from  
23 the Bermite site to the four wells in question?

24 A Yes, I have.

12:02PM 25 Q Do they take into account the amount of time it

1 would take to travel through the soil to the groundwater?

2 A I don't believe they did a column for that, no.

3 Q Is that significant?

4 A It is significant because, particularly in a  
12:02PM 5 semi-arid environment like this, water and contaminants  
6 dissolved in the water take a long time to move hundreds of  
7 feet. This is the area we call the unsaturated zone.  
8 Essentially it's not filled with water. There is some water in  
9 this area above the water table. It takes a long time for that  
12:02PM 10 water to slowly move from the surface down to the water table.

11 Q And how long would it take?

12 A No one has really measured it at this site. It  
13 could take up to decades actually if it's 700 feet or 500 feet.  
14 It could take a long time.

12:02PM 15 Q Without knowing that, can you determine how long  
16 it would have taken for spills on the surface to have reached  
17 either Saugus 1 or Saugus 2?

18 A Well, if you're trying to do that calculation,  
19 this is something that you would have to include in that  
12:03PM 20 calculation, yes.

21 Q Okay. Now, the calculation, as it relates to the  
22 movement through the groundwater, you have reviewed the  
23 opinions of plaintiff's experts; right?

24 A Yes.

12:03PM 25 Q What is your opinion as to those opinions?

12:03PM

1                   A        Well, calculating the groundwater velocity and  
2 then the transport in the velocity is subject to some  
3 uncertainty. For example, one of the key parameters that we  
4 do -- that we use to calculate how fast groundwater is moving  
5 is something called hydraulic conductivity. It is basically  
6 the ability of the subsurface to have water move through it.  
7 Clay, water doesn't move through very easily. Gravel, water  
8 moves through it very readily.

12:04PM

9                   Hydraulic conductivity has been measured in this  
10 big area all over. It varies probably by three to four orders  
11 of magnitude. So there's a lot of variability. Calculating  
12 one groundwater velocity for this large area, you have to lump  
13 all the hydraulic conductivity values into one value. It  
14 doesn't represent really what's going on in the subsurface.

12:04PM

15                  Q        Why not just average them?

12:04PM

16                  A        Well, an average you don't know -- you're  
17 basically lumping all these values together. You don't know,  
18 for example, if predominantly it has a lower hydraulic  
19 conductivity or a higher hydraulic conductivity. There's just  
20 not enough data to determine that.

21                  Q        Is this one of the areas as a scientist you need  
22 to say, I don't know?

12:05PM

23                  A        Well, we tend to try to measure -- well, we tend  
24 to try to calculate groundwater velocity. The key is that  
25 there is uncertainty to it. When you're trying to determine

1 how far contaminants have traveled, that's one way to do it.  
2 You try to calculate with the uncertainty, groundwater  
3 velocity, retardation coefficients. There's a lot of unknowns  
4 in these variables.

12:05PM 5 An easier, better way to do it is to construct  
6 monitoring wells and actually see where the contaminants are  
7 and where they aren't.

8 Q Is that what you did?

9 A I looked at all the data, and that's basically  
12:05PM 10 what I made my conclusions on, yes.

11 Q All right. Let's go to SIC. We looked at this  
12 before. This is generally the location of SIC; correct?

13 A The red outline is what we call the SIC site,  
14 yes.

12:05PM 15 Q All right. And what does it show us?

16 A This, again, is the SIC site outlined in red, and  
17 we see the Saugus 1 production well and Saugus 2 production  
18 well. The distance from the SIC site to Saugus 1, I think, is  
19 about 800 feet.

12:06PM 20 Q How about Saugus 2?

21 A Saugus 2 is about the same, maybe slightly less,  
22 but it's relatively close.

23 Q Now, are there any significant geological  
24 formations that affect your opinion as to whether or not SIC  
12:06PM 25 could be the source of contamination?

12:06PM

1 A Yes. I looked at the geology. The SIC site  
2 happens to be located right within essentially a fault zone.  
3 The San Gabriel fault is a major fault in this area. What the  
4 geologists over the years have determined is that this faulting  
5 has caused the Saugus formation to dip upwards severely. Right  
6 under the SIC site it dips at a 60-degree angle to horizontal  
7 very steeply.

8

Q What does that mean?

12:07PM

9 A Well, what that means, in addition, the work  
10 that's been done at the SIC site, the Saugus formation is very  
11 shallow under the SIC site meaning the alluvium material that  
12 you see here in gray is very, very thin. And so the Saugus  
13 formation is fairly shallow under the SIC site. As a matter of  
14 fact, about half the wells are screened within the Saugus  
15 formation.

16

So the layers of the Saugus formation are right  
underneath the SIC site. We don't -- nobody has determined  
exactly which ones. Are they 3A or 5. We don't exactly know.  
What we do know is that it dips severely right at the SIC site.

12:07PM

20 Q Does that mean it would be easier for the  
21 contamination to reach the Saugus formation?

22

A Yes. And one thing I forgot to mention is that  
the dipping of these layers is towards the southwest, and  
that's where the Saugus 1 and Saugus 2 wells are.

12:08PM

25 Q All right. Now, you talked about alluvium wells.

1 Is there any significance to AL-6 or -12?

2 A Well, AL-6 and -12 are located adjacent to the  
3 two production wells, Saugus 1 and 2. As you can see, AL-6 is  
4 next to Saugus 2. AL-12 is next to Saugus 1. Now, they are  
12:08PM 5 alluvial wells meaning they are shallow wells. What we see in  
6 these two wells are detections of TCE and chloroform, and we  
7 see detections of TCE and chloroform on the western side of the  
8 SIC site and also in wells across the street between the SIC  
9 site and Saugus 1. And so my conclusion was that the TCE and  
12:08PM 10 the chloroform are from the SIC site.

11 Q Now, Mr. Hokkanen, have you reviewed something  
12 called the source report in relation to SIC?

13 A Yes.

14 Q Does it talk at all about AL-6?

12:09PM 15 A The source report, this is the CH2M Hill report  
16 from 2015?

17 Q No. The source report is the one that was done  
18 by SIC.

19 A Oh, the feasibility study. Is that what you're  
12:09PM 20 talking about? No. That was just related to the site itself.  
21 They're not offsite wells that were identified.

22 Q Okay. So you mentioned something about -- I  
23 almost forgot about this.

24 What does the next slide, 59, tell you?

12:09PM 25 A Well, SIC, their consultants have constructed a

12:10PM

1 series of wells. I believe there's about 16 wells out here.  
2 And like on the Bermite site, they have measured water levels,  
3 and they have collected water samples and had them analyzed to  
4 determine water quality. This is a figure from 2000 -- again,  
5 I can't really read the year. This is essentially a water  
6 table map. We talked about contouring the water elevations.  
7 And that's what these lines are. These are basically equal  
8 elevations.

12:10PM

9 Now, as I mentioned, water flows from a high  
10 elevation to a low elevation. It flows downhill. And what  
11 this -- this is a higher elevation than this one. So  
12 essentially water is flowing this way and also this way. And  
13 so right within the SIC site, we have some of the groundwater  
14 flowing to the northeast and some of it flowing west to the  
15 southwest.

16 Q This is why you look at data, isn't it?

17 A Yes. This is why we take a careful look at the  
18 data, yes.

12:10PM

19 Q Have you seen the different flow directions when  
20 you look at contaminants?

21 A Well, you match up the flow directions with what  
22 you see in the water quality. What we see briefly is we see  
23 TCE and chloroform on the west side of the SIC property. We  
24 also see it across the street here. And we also see it in the  
25 shallow AL12 -- sorry. Getting ahead of you.

1 Q So how about DCA? What is DCA?

2 A DCA is another VOC. It's dichloroethane.

3 Q And do we find it in Saugus 1 or 2?

4 A No, we don't.

12:11PM 5 Q But we find it on the SIC site, don't we?

6 A We find it in fairly high concentrations, yes.

7 Q Doesn't that mean that the SIC site can't be the  
8 source since we don't find any DCA in 1 and 2?

9 A Not necessarily, no. If you see -- if you see  
12:11PM 10 other chemicals from the site, that may be an indicator it may  
11 be the source.

12 Q Now, what's the significance of all of the high  
13 numbers of DCA on the top and basically non-detects on the  
14 bottom?

12:12PM 15 A Well, if you remember the groundwater flow map we  
16 looked at, what we saw was that on the east side of the SIC  
17 site, groundwater was flowing this way, and on the west side it  
18 was flowing this way.

19 Now, that correlates with what we see also in  
12:12PM 20 monitoring wells because we see chloroform and TCE in the same  
21 direction that groundwater is shown flowing on the flow map.

22 Q How about if we look at another chemical. Let's  
23 take a look at chloroform. Do we find chloroform in Saugus 1  
24 or 2?

12:12PM 25 A Yes, we do.

1 Q Do we find it on the SIC site?

2 A We find it primarily, again, on the western side.

3 You can see the wells in this area detect chloroform and also

4 across the street. But on the east side of the site we don't

12:13PM 5 see the chloroform.

6 Q All right. How about TCE?

7 A TCE we see in a number of areas of the site.

8 Some of the highest concentrations we see over on the western

9 side. We do see some on the eastern side also. But there's

12:13PM 10 quite a bit of it on the western side of the site.

11 Q I think this is the last one. Nope.

12 Is there -- in your work in this case, did you

13 find any indication that -- that there were businesses on the

14 SIC site that used VOCs?

12:13PM 15 A Yes. They used -- basically the SIC business was  
16 making PVC.

17 Q Does that use solvents?

18 A Well, one of the EPA reports stated that they  
19 used over 50 million pounds of VOCs a year.

12:14PM 20 Q How many years did it operate?

21 A Decades. 30, 40 years, something like that I  
22 think. Long time.

23 Q So we're talking over a half a billion pounds?

24 A Well, to make PVC you need a lot of VOCs.

12:14PM 25 Q Which would include TCE?

1 A I remember I think it may have been the same EPA  
2 report. They said in 1988 they used 300,000 pounds of TCE.

3 Q Last issue I want to talk about V-201 and V-205.  
4 If we can put up 158.

12:14PM 5 Is the sequence of events about when PCE -- I'm  
6 sorry -- when TCE was found at those two wells relevant to you?

7 A Very important, yes.

8 Q Why?

12:15PM 9 A Well, V-201 is, as you can see, is closer to the  
10 Bermite site than V-205. V-205 is about -- a little less than  
11 a half a mile west of V-201. So anything migrating from the  
12 east to the west would be detected in V-201 before it would be  
13 detected in V-205.

14 Q Why is that important?

12:15PM 15 A Why is that important?

16 Q Yeah.

17 A Well, if -- if detections of a chemical show up  
18 in the further well first and secondly in the closer well, it  
19 would tell you that the source isn't from the east. It's got  
12:15PM 20 to be from somewhere else.

21 Q Do you know what the source is?

22 A Well, TCE has been detected in both of those  
23 wells, and no, I don't know the source.

24 Q But do you have an opinion as to whether it is  
12:15PM 25 the Bermite site?

1 A Well, TCE was detected in 205 before it was  
2 detected in 201. So what that tells me from a transport  
3 standpoint, it's not coming from the east. Bermite is to the  
4 east. So my conclusion was it's not coming from Bermite.

12:16PM 5 MR. BLUM: Thank you, Mr. Hokkanen. That's all.

6 THE COURT: Mr. Richard.

7 MR. RICHARD: Yes, Your Honor. Thank you.

8 **CROSS-EXAMINATION**

9 BY MR. RICHARD:

12:17PM 10 Q Mr. Hokkanen, I would like to ask you -- you said  
11 you reviewed the report or reports of Ms. Stanin; is that  
12 right?

13 A Yes.

14 Q And there are a number of principles and data  
12:17PM 15 points that you agree on; correct?

16 A I'm not sure which ones you are referring to, but  
17 I believe there are some, yes.

18 Q Let's start with groundwater flow direction. I  
19 think you testified to this.

12:17PM 20 You would agree that groundwater flow direction  
21 is generally perpendicular to the contour lines you talked  
22 about?

23 A Generally perpendicular. That's why we measure  
24 water levels, yes.

12:17PM 25 Q Would you agree that those elevation contour

1 lines can provide helpful information when considering not just  
2 groundwater flow but the flow of the contaminants in the  
3 groundwater?

4 A That's part of the analysis, yes.

12:18PM 5 Q And you have represented that in this case in --  
6 I think it's figure 15. It's Exhibit 1046.120. If we could  
7 pull that up.

8 This is -- the report is subject to a -- the  
9 figures are subject to stipulation.

12:18PM 10 MR. BLUM: No objection as to identification  
11 purposes only, Your Honor.

12 THE COURT: With the figures?

13 MR. BLUM: Yes, Your Honor.

14 MR. RICHARD: Yes, Your Honor.

12:18PM 15 MR. BLUM: They can be shown but not entered into  
16 evidence.

17 THE COURT: All right.

18 MR. RICHARD: All right. If we could just  
19 enlarge where we see all the blue lines.

12:18PM 20 Q So what we are looking at here, this is a report  
21 that -- you used the AECOM report for a certain period of time;  
22 is that right?

23 A Yes.

24 Q So this is what? One three-month period?

12:19PM 25 A This is -- well, the legend is gone now. I can't

1 remember. I think it may have been the third quarter of '19.  
2 So water levels again are measured over -- third quarter of  
3 '19.

4 Q Right.

12:19PM 5 A Water levels are measured over a few days, I  
6 believe.

7 Q Okay. And so my question is AECOM, those were  
8 folks working for Whittaker; is that right?

9 A I believe that's correct, yes.

12:19PM 10 Q And you -- and they prepared these reports with  
11 these contour lines every quarter for quite a few years?

12 A Quite a few years, yeah.

13 Q And so if we're looking at these contour lines,  
14 you have a blue arrow, a couple blue arrows.

12:19PM 15 Do you see that?

16 A Actually, those aren't my blue arrows. I think  
17 those are AECOM's.

18 Q That was going to be my question.

19 And has AECOM drawn those blue arrows correctly,  
12:20PM 20 in your view?

21 A In those two locations, they appear to be pretty  
22 correct, yes.

23 Q And that's because they are perpendicular to the  
24 contour lines that have been drawn?

12:20PM 25 A Yes.

12:20PM

1 Q And I wanted to ask you. You were shown very  
2 quickly a lot of AECOM maps, some of which had contour lines,  
3 others of which had dotted lines for the interpretation of a  
4 potential plume. Would it be fair to say, when you see maps  
5 with plumes drawn, that's an interpretation of whoever is  
6 preparing that map at that particular time?

7 A It's an interpretation based on the data, yes.

12:20PM

8 Q Okay. Would you agree that -- I think you  
9 touched on a couple of these -- that there are other factors  
10 that can influence groundwater flow direction over time and one  
11 of those factors is if there are pumping wells?

12 A There are a number of factors -- pumping wells,  
13 time of the year, rainfall events, a number of factors, yes.

12:21PM

14 Q And one of the other factors you mentioned are  
15 fault lines.

16 Is that fair?

17 A I don't think I mentioned fault lines as a factor  
18 for groundwater flow, but they can be.

12:21PM

19 Q Okay. Here in this figure 15, this is a figure  
20 you used and included in your report in this case; correct?

21 A Yes.

22 Q And so do we see fault lines in OU-5, for  
23 example?

12:21PM

24 A Yeah. That's the -- I mentioned the San Gabriel  
25 fault previously, and that's, I believe, the one you're

1 referring to.

2 Q And so is it correct that fault lines can act as  
3 a barrier or semi-barrier, partial barrier, when it comes to  
4 groundwater flow?

12:21PM 5 A They can, yes.

6 Q And so -- and when groundwater hits a fault, you  
7 would expect it to travel, in general, the same direction as  
8 that fault?

9 A It depends. For example, the San Gabriel fault  
12:22PM 10 groundwater is moving -- can't move across it. There's been a  
11 lot of study of the San Gabriel fault. Water doesn't appear to  
12 move across it. So where exactly water flows, it can move  
13 perpendicular to that. It depends on what's going on  
14 hydraulically in that area.

12:22PM 15 Q Okay. In at least some instances you would agree  
16 with Ms. Stanin that, depending on the level and the nature of  
17 the fault, that water -- it could influence the direction of --  
18 the direction of the groundwater flow.

19 A It could.

20 THE COURT: Did you indicate it would flow  
21 potentially perpendicular or parallel to the fault line?

22 THE WITNESS: Well, some faults water won't move  
23 across the fault. Some faults water does move across the  
24 fault.

25 THE COURT: How about this fault line?

1 THE WITNESS: San Gabriel fault is widely  
2 acknowledged as being a barrier to groundwater flow.

3 THE COURT: If there is contamination that is in  
4 the groundwater along the fault, where would you expect it to  
5 flow?

12:23PM

6 THE WITNESS: Well, it wouldn't flow to the other  
7 side of the fault.

8 THE COURT: That's clear.

9 THE WITNESS: Yeah.

12:23PM

10 THE COURT: But where would it flow? Not where  
11 wouldn't it flow. And I appreciate the help.

12 THE WITNESS: Well, for example, if the general  
13 groundwater flows to the northwest, it would continue flowing  
14 to the northwest.

12:23PM

15 THE COURT: All right. Thank you.

16 Q BY MR. RICHARD: In your report, sir, you  
17 observed that the general direction of the groundwater flow  
18 across this area of the Bermite-Whittaker site is to the north,  
19 northwest; correct?

12:23PM

20 A Generally to the northwest, yeah.

21 Q Okay. With respect to the layers of the Saugus  
22 formation beneath the Whittaker site, would you agree that the  
23 formation dips to the northwest?

24 A It generally dips to the northwest, northwest is  
25 my understanding.

12:24PM

1 Q Okay. And that's something you observed in your  
2 report as well?

3 A I believe so, yes.

12:24PM 4 Q In this figure 15, if we -- there's no -- can I

5 draw on this?

6 If we were to draw a line there, is my red line  
7 generally in the northwest direction?

8 A Yes.

12:24PM 9 Q Okay. And you mentioned -- I want to find my  
10 notes on this.

11 You mentioned groundwater velocity. Do you  
12 recall that in questions you were just asked a minute ago?

13 A Yes.

14 Q And you said something to the effect that  
12:24PM 15 something we -- we tend to try to calculate groundwater  
16 velocity.

17 Do you recall that?

18 A Yes.

19 Q And that's something that folks in your line of  
12:24PM 20 work do, and there's a formula for that; right?

21 A Yes.

22 Q And you would agree that, although there's a  
23 formula, it can -- the groundwater velocity is an estimate. It  
24 can vary?

12:25PM 25 A It can vary quite a bit sometimes. But yes, it

1 varies.

2 Q And is part of the groundwater velocity  
3 calculation based -- can that be based on field data from pumps  
4 in the field or from wells in the field?

12:25PM 5 A Yes.

6 Q Okay. And in this case, you did not attempt to  
7 calculate groundwater velocity for any of the Saugus formation  
8 HSUs below the Whittaker-Bermite site; is that correct? At  
9 least as of the time of your report and deposition.

12:25PM 10 A That's correct.

11 Q Would it be too general of a statement to say  
12 that the four wells at issue in this case, the wells that the  
13 water agency uses or would like to use for drinking water,  
14 those are generally downgradient of the Whittaker site?

12:26PM 15 A Generally they are downgradient, yes.

16 Q And would you say that you conducted a site  
17 assessment of the Whittaker site?

18 A How do you define a site assessment?

19 Q Well, that's a good question.

20 In your line of work, are you familiar with  
21 something called a site assessment? Or when you were with the  
22 EPA, did you learn there was something called a site  
23 assessment?

24 A There are different forms of site assessments,  
25 yes.

1 Q Okay. How would you describe the form of site  
2 assessment you did in this case?

3 A The assessment that I did was I used the existing  
4 data that's been generated over quite a few years to draw  
12:26PM 5 conclusions about the question that I was asked to look at.

6 Q One of the things you looked at was something  
7 called source areas; right?

8 A Yes.

9 Q And so you actually in your report include a  
12:26PM 10 description of some of the history of, as you understand it, of  
11 the Whittaker site; correct?

12 A I think I had a brief history of the Whittaker  
13 site, yes.

14 Q Well, you cite and discuss, for example, reports  
12:27PM 15 prepared by Wenk & Associates, Inc.?

16 A Yes.

17 Q And you say that the first investigation of the  
18 Whittaker site -- the first investigations were in 1986 or '87  
19 by Wenk.

12:27PM 20 Do you recall that?

21 A That's my understanding, yes.

22 Q And, by the way, source area, is that where -- in  
23 your terminology, that's where release of contaminants to the  
24 environment occurred?

12:27PM 25 A That's correct.

1 Q Okay. And is it fair to say there were numerous  
2 source areas for both perchlorate and TCE and PCE at the almost  
3 thousand-acre Whittaker site?

12:27PM 4 A Yeah. There was quite a bit of sampling done to  
5 try to determine where the source areas were. There were quite  
6 a number of them. And they tended to be -- the perchlorate and  
7 VOC source areas tended to be the same ones.

12:28PM 8 Q Getting back to the -- what you described as the  
9 first investigations of the Whittaker site, weren't there  
10 actually -- didn't Whittaker actually hire a geologist five  
11 years before the Whittaker report you are referring to?

12 A And who is that? I'm sorry. I'm not familiar  
13 with that. Is that Slade?

14 Q Well, you've heard of someone called  
12:28PM 15 Richard Slade?

16 A Yes.

17 Q Have you heard of someone called Bob Bean or  
18 Robert Bean?

19 A No.

12:28PM 20 Q Do you know if Mr. -- so it's fair to say you  
21 didn't see any report in your work in this case when you were  
22 looking at the history of the Whittaker site, you didn't see  
23 any report by any geologist hired by Whittaker in 1982?

24 A I don't believe so, no.

12:28PM 25 Q And in your experience, again -- you spent a

12:29PM

1 couple years with the EPA before you became a consultant. Is  
2 it sometimes helpful to understand, look at historical  
3 documents, as to where, especially for a site that's large and  
4 operated for many decades, look at historic records to see  
5 where solvents and chemical wastes were disposed of at the  
6 site?

7 A It can be part of a site assessment, yes.

8 Q Okay. Is that one of the reasons you looked at  
9 the Wenk reports in this case, to get a sense of that?

12:29PM

10 A No.

11 Q Is it fair to say you did not look at any records  
12 in this case to try to get a sense of where the source areas  
13 were based on historic uses and disposal practices?

12:29PM

14 A No. I used the -- primarily I think it was CDM  
15 who did a lot of soil sampling, soil gas sampling to try to  
16 determine where the source areas were. I -- that was -- that  
17 was what I used in my expert report.

18 Q Right. So -- when you say CDM, you're talking  
19 about CDM Smith?

12:30PM

20 A Yes.

21 Q They're the folks who prepared a number of  
22 reports regarding their efforts to identify and extract TCE,  
23 PCE, and other VOCs from the site?

24 A Yes.

12:30PM

25 Q Okay. And you reviewed those reports?

1 A Yes.

2 Q And is it fair to say you reviewed the Wenk  
3 reports that you cite and discuss in your expert report?

4 A I believe I did, yes.

12:30PM 5 MR. RICHARD: How are we doing on time,  
6 Your Honor?

7 THE COURT: We will go ahead and take our break  
8 at this point.

9 So, ladies and gentlemen, it is now 12:30. We  
12:30PM 10 will break until 1:00 o'clock.

11 Please remember, don't speak to anyone about the  
12 case, the people, or the subject matter. Keep an open mind.  
13 Enjoy the 30-minute break. We will see you at 1:00 o'clock.

14 (The following proceedings were held in  
12:31PM 15 open court outside the presence of the jury:)

16 THE COURT: Please be seated. We're outside the  
17 presence of the jury.

18 Just briefly, Mr. Blum, tell me after  
19 Mr. Hokkanen who will you call next?

12:31PM 20 MR. BLUM: Tim Simpson will be our next witness.  
21 And we actually believe we will be resting tomorrow.

22 THE COURT: All right. And so you have --

23 MR. BLUM: With the caveat that I need to talk to  
24 the Court about.

12:31PM 25 THE COURT: You still need to speak in a

1 microphone. I can't hear you.

2 MR. BLUM: Sorry. We will be resting tomorrow  
3 with a single caveat that I need to discuss with the Court.

12:31PM 4 THE COURT: Who are the deponents who will be  
5 testifying in your case other than Ms. Durant?

6 MR. BLUM: It would be Mr. Simmons, Jisa, and  
7 Luce. Just those three, Your Honor. And they should be very  
8 short.

9 THE COURT: And do I have all of the  
12:32PM 10 designations, cross-designations, as well as the objections for  
11 all of these deponents?

12 MR. BLUM: Your Honor, you do. But we have  
13 greatly reduced the numbers. And I believe, based on  
14 discussions with plaintiff, that we will be able to give you  
12:32PM 15 the transcript without any objections from anybody.

16 THE COURT: And that applies to which of these  
17 four --

18 MR. BLUM: All four. It's only -- not Ms. Durant  
19 but the other three, Your Honor.

12:32PM 20 THE COURT: All right. And with Ms. Durant, just  
21 as a basic proposition, do you agree or disagree that you're  
22 not permitted to introduce basis -- basis evidence that is  
23 relied upon by an expert other than indicating what the expert  
24 relied upon?

12:33PM 25 MR. BLUM: I believe we are in this instance

1 because she was acting for the water agency in filing that  
2 report and it becomes adoptive admissions. And we can -- we  
3 can inquire as to the basis behind those admissions.

12:33PM

4 THE COURT: So, in other words, you're not  
5 attempting to introduce what otherwise would be hearsay  
6 evidence but in -- in connection with Ms. Durant. You're  
7 claiming that it is -- well, actually, you are, but you're  
8 claiming under federal law that it is an exception to the  
9 hearsay rule.

12:33PM

10 MR. BLUM: Yes, Your Honor.

11 THE COURT: And that is the sole basis upon which  
12 you're seeking to admit that evidence that is otherwise  
13 hearsay?

12:33PM

14 MR. BLUM: Well, Your Honor, I can't say that a  
15 blanket statement for every objection of hearsay, but  
16 generally, yes.

17 THE COURT: And was Ms. Durant designated an  
18 expert in this case?

12:34PM

19 MR. BLUM: She was a -- I believe she was a  
20 non -- a non-retained expert from plaintiff, but I'm stretching  
21 my recollection.

22 THE COURT: All right. Mr. Richard, is  
23 Ms. Durant an expert?

12:34PM

24 MR. RICHARD: No, Your Honor. She's -- she was a  
25 consultant. There's been some testimony about her, but she is

1 not a retained expert. So no. Those rules would not apply.

2 THE COURT: All right. So how is it that you  
3 intend to introduce this evidence because I haven't reviewed  
4 all of the controverted designations, but it does appear to me  
12:34PM 5 that she's being used as an expert in the case.

6 MR. BLUM: Your Honor, I don't think she is. I  
7 think she's used as a consultant who wrote a report which was  
8 approved by Mr. Alvord which he testified to.

9 THE COURT: All right. And I don't want chew up  
12:34PM 10 too much since we only have 30 minutes and I would like to let  
11 you all go.

12 But would you agree or disagree that the dividing  
13 line in that regard is that, if you're asking questions about  
14 the report to which she has knowledge and she's telling you  
12:35PM 15 about the report, that's one thing. If you ask her about  
16 opinions, that's a separate thing.

17 MR. BLUM: That would be one -- that could be one  
18 dividing line, Your Honor.

19 THE COURT: That's helpful as I look through  
12:35PM 20 this. Thank you.

21 We're in recess until 1:00 o'clock. Thank you.

22 (A recess was taken at 12:35 p.m.)

23

24

25

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10 STENOGRAPHICALLY REPORTED PROCEEDINGS HELD IN THE  
11 ABOVE-ENTITLED MATTER AND THAT THE TRANSCRIPT PAGE FORMAT IS IN  
12 CONFORMANCE WITH THE REGULATIONS OF THE JUDICIAL CONFERENCE OF  
13 THE UNITED STATES.

14

15 DATED THIS 30TH DAY OF NOVEMBER, 2021.

16

17

18 /S/ MIRANDA ALGORRI

19

MIRANDA ALGORRI, CSR NO. 12743, CRR  
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